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FOREIGN AGRICULTURE REPORT

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FOREIGN AGRICULTURAL RELATIONS
U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C.

THE EUROPEAN MARKET FOR DRY EDIBLE BEANS AND RELATED PULSES

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by

JUDSON A. THOMPSON
Marketing Specialist

FOREIGN AGRICULTURE REPORT No. 47 MAY 1950

FOREWORD

This report presents the results of a survey of the dry bean and pea marketing situation in western Europe, made in the fall of 1949 in the interests of the dry pulse industry of the United States. Purpose of the study was to obtain information concerning production, consumption, and foreign trade in dry edible beans and peas in the important consuming and producing countries of western Europe, and to develop information on types and varieties preferred there.

Judson A. Thompson, marketing specialist, conducted the first-hand study for this Office while on leave from his other research duties with the Grain Branch, Production and Marketing Administration, United States Department of Agriculture. His survey covered the United Kingdom, Germany, Norway, Sweden, Denmark, the Netherlands, Belgium, France, Switzerland, Italy, Greece, Spain, and Portugal.

This study was conducted under the provisions of the Research and Marketing Act of 1946. The possibilities of broadening and maintaining foreign markets for other agricultural commodities also are being studied by this Office, and the findings are presented in other circulars and reports that may be obtained, free, from the Office of Foreign Agricultural Relations, United States Department of Agriculture, Washington 25, D. C.

Joseph A. Becker
Chief International Commodities Branch

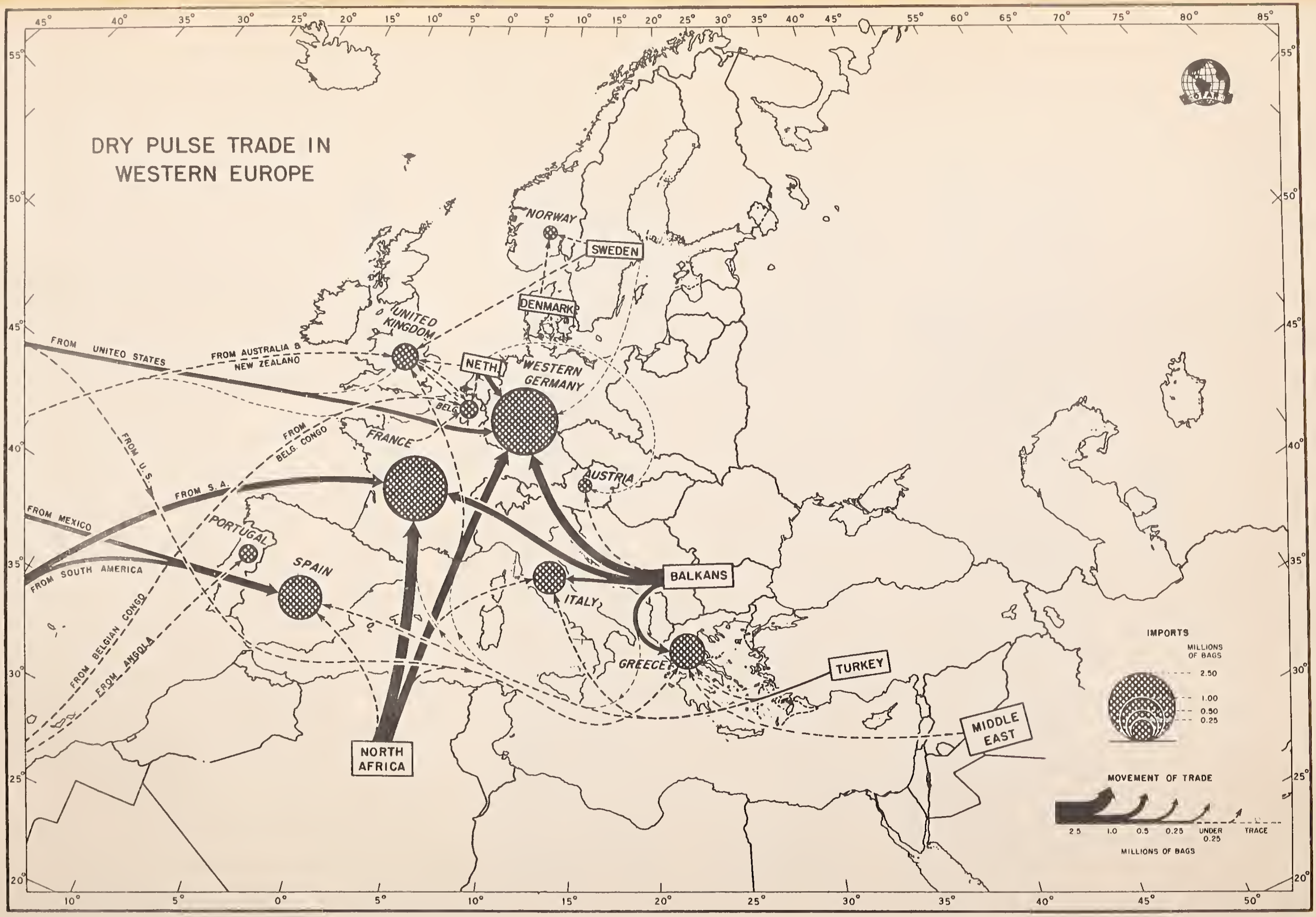

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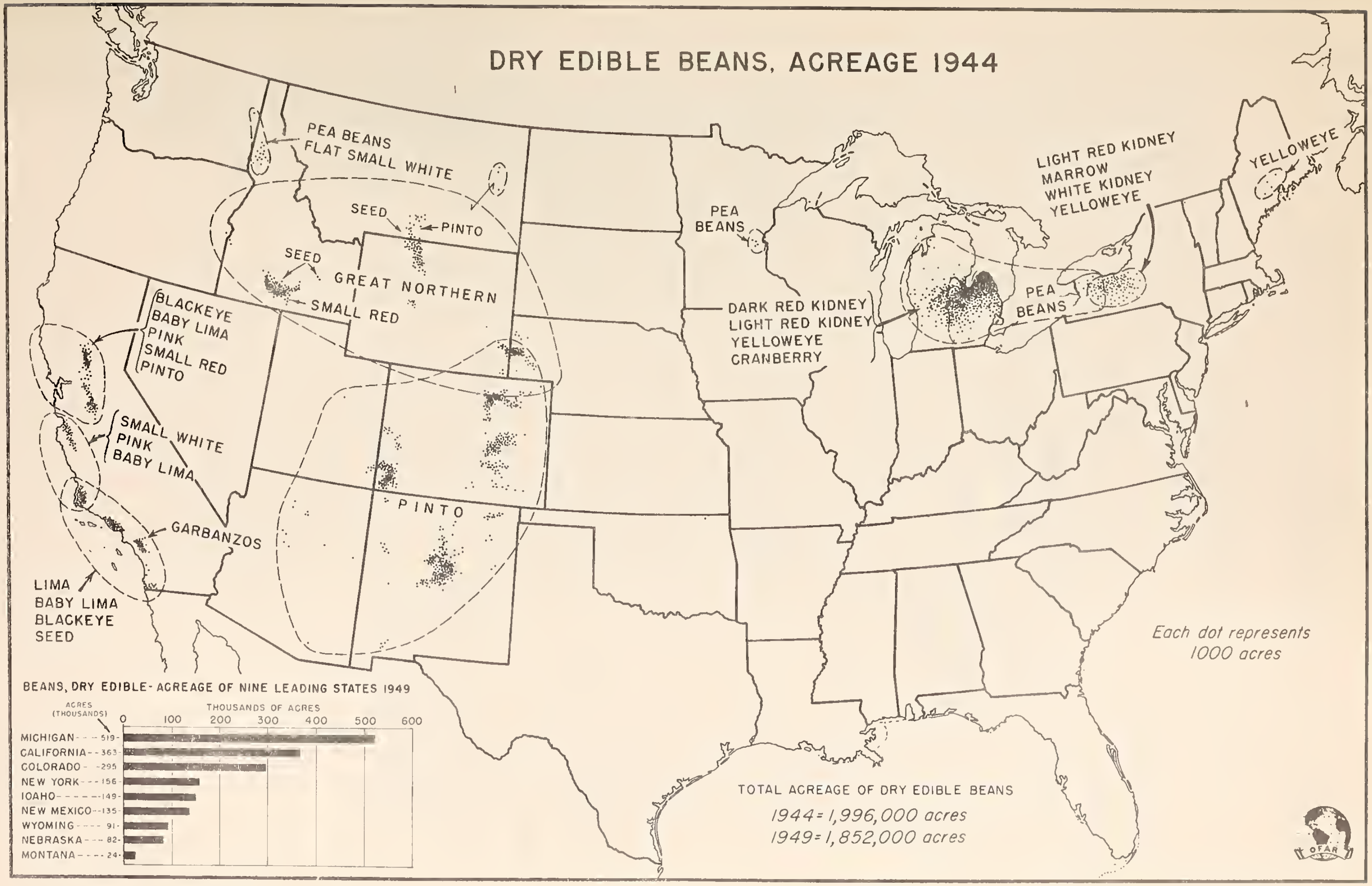
FIGURE 1



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ACKNOWLEDGMENT

The following report is based largely upon information obtained during the October-December period, 1949, from the dry edible bean and related pulse trade and from agricultural officials while the writer visited Norway, Sweden, Denmark, the Netherlands, Belgium, Germany, France, Switzerland, Greece, Italy, Spain, and the United Kingdom. The information obtained was supplemented by data taken from reports or records of United States Foreign Service Officers and from those of the United States Department of Agriculture. The writer is indebted to firms of the United States engaged in the import and export trade of dry pulses for recommending key people to see in Europe. He also wishes to thank foreign importers who cooperated in every way possible to make the report a success by furnishing pulse information, type samples, pictures, and statistics. Many of the photographs used are by the kind permission of Batchelors Peas Ltd., Sheffield, England, W. P. Vanden Heuvel, Merxem, Belgium, and R. W. Gunson (Seeds), Ltd., London, England. Special thanks are also due Messrs. Gustave Burmeister and Orval Goodsell, OFAR, for editing and recommendations, to Mr. R. G. Hainsworth for the preparation of trade charts, and to Helen L. Black, PMA, for special efforts in preparing the pulse figures for photographing.

To all of the above individuals and agencies the writer is deeply indebted and hereby wishes to express his appreciation. Much of the data from the trade was of a confidential nature and could not be divulged in the form given. The writer has attempted to use the information received as accurately as possible, and when he felt privileged to incorporate the valued data.

The European Market
for
DRY EDIBLE BEANS AND RELATED PULSES

by

Judson A. Thompson
Marketing Specialist

The term "dry edible pulses" has been generally accepted by world traders, especially in the last few years, as a short title including all the dry edible legumes produced in pods on herbaceous stems. The more common of the edible types are dry beans, dry peas, lentils, garbanzos, cowpeas, broad and horse beans, and some lupines, soybeans, vetch, hyacinth beans, and several less important types used occasionally for food. Among the many economic genera of plants belonging to the legume family, there is none so important from the standpoint of its use for human food as the seed of the common field or garden bean *(Phaseolus vulgaris)*.

The word "bean" was first applied to the Old World plant known as garden or broad beans, *Vicia Faba,* which is botanically more nearly related to the garden pea, *Pisum sativum*, than to the plants we now call beans. The word used without qualification is now understood in the United States to apply to the genus *Phaseolus*. Several species of this genus are used for food, and they constitute nearly the whole supply of our dry beans.

The cultivation and use of pulses for food have been important in the Mediterranean area for centuries. Literature records the cultivation of beans, lupines, and lentils in the Nile Valley as early as 2000 B.C. In European crop reports, we find listed under dry edible legumes such classifications as haricots, kidney beans, feveroles, lingots, flageolets, horse beans, broad beans, pigeon beans, field beans, wild beans, lupines, lentils, garbanzos, chickpeas, and many others. In America, these terms are commonly used: navy beans, frijoles, chili beans, cranberry, blackeye, Alaska, white Canada, and others. The classification of pulses referred to in this report is listed in table 1.

This report on the market situation in Europe relating to dry edible beans and related pulses points out many different habits and traditions of the Old World, affecting production, types preferred, colors used, quality, trade, consumption, and the general marketing picture. These facts have not been fully realized by people of the United States interested in dry edible legumes, so a comparison of the United States with European countries is made. The writer has attempted to point out trends of production by comparing recent crops with prewar acreages, yields, and tonnages produced.

SUMMARY

Generally the production of pulses in Europe is considerably below prewar. (See tables 2 through 6.) This may be attributed to a number of factors: Improper rotation in many areas has resulted in very low yields and reduced production, although acreages have been increased in some countries. Fertilizer has not been available, or price has made it unobtainable for several years, resulting in the land's being badly exhausted of necessary elements. In addition, weather conditions since the war have not been so favorable in Europe as they have in the United States.

Types of Pulses Used

The types of pulses used vary greatly from country to country, and habits are much different from those in the United States. The consumption of beans is the most important; however, the per capita consumption of dry peas, split peas, lentils, garbanzos, Fava (horse beans), and minor pulses is also much greater than in the United States. More peas are used in northern Europe while more lentils. garbanzos, and horse beans are used around the Mediterranean. Some cities use as many lentils as dry beans. In Denmark practically all of the peas are decorticated (seedcoat removed) and used whole. There is practically no demand for split peas in that country. In the United Kingdom large quantities of dry peas are canned (both wrinkled and smooth types); this is not practiced in any other country to such an extent. It is noted that the people have followed traditions of their fathers and grandfathers so long that it is difficult to sell them different types than what they have always eaten. It is a tradition to serve certain kinds of pulses on certain days. In a number of countries people have 1 or 2 days each week on which to serve one of the pulses as the main dish.

Color of Beans or Peas Used

The color of beans or peas used by different peoples is of utmost importance. For example, in Sweden practically all the beans used are brown, and peas are used whole. It is almost impossible to sell other kinds of beans or split peas in that country. In some countries colored beans are not used at all. White or yellow peas are more preferred in Europe than in the United States.

Quality and Grades of Pulses Used

The quality of most pulses sold in Europe is far inferior to that of the beans and peas marketed in the United States, especially when U. S. packagers utilize transparent packaging films. Low quality pulses are imported from such areas as Turkey, Angola, and North Africa on an f.a.q. (fair average quality) basis, containing much chaff, small and mixed beans, and often insect-bored or diseased pulses. A number of larger import firms depended prewar on milling much of these low-grade pulses for local and re-export sales. The European firms were well pleased with U.S. shipments largely because of high quality. The beans received were U.S. No. 2 or better, and were uniform in size. Quality standards may be referred to in the Appendix.

Import and Export Trade

At present very few countries in Europe produce enough pulses for their own use. Sweden and the Netherlands produce more peas than are required and export substantial tonnage to Norway, England, Germany, and other countries. Germany has a greater import requirement than other countries. However, England, France, Spain, Portugal, and Greece need to import substantial quantities to meet requirements.

TABLE 1.--*Botanical classification and common names of dry pulses*

NAME OF PULSE	BOTANICAL CLASS AND GENUS	EXAMPLE OF CLASS
Common field beans..............	Phaseolus vulgaris	Navy, kidney, Great Northern (American); habas (Mexican); feijaos (Portuguese); frijoles (Italian); bohnen (German)
Lima beans......................	Phaseolus lunatus	Standard limas, sieva or baby limas (American); Madagascar limas (Madagascar)
Field or garden peas............	Pisum sativum	Common peas, Alaska, Dutch blue, marrowfat
Broad bean and horse beans.......	Vicia faba	Windsor, fava, (England); pigeon beans (Belgium)
Lentils.........................	Lens esculenta	Mediterranean and American lentil
Garbanzos.......................	Cicer arietinum	Chickpea, coffee bean, gram, porquero, gypsy pea
Cowpea..........................	Vigna sinensis	Blackeye, crowder pea, ordinary cowpea
Butternut and haricot runner.....	Phaseolus coccineus	Oregon lima, runnerbeans
Mung beans and Chinese red.......	Phaseolus aureus	Chinese beans, Oklahoma, China
Hyacinth bean...................	Dolichos lablab	Egypt, ornamental in U. S.
Soybeans........................	Soja max	Not used much for food in Europe
Lupines.........................	Lupinus albus	Used for food to a slight extent

TABLE 2.-*Beans, dry edible: Acreage, yield per acre, and production in specified countries, averages 1935-39 and 1940-44, annual 1948 and 1949*

CONTINENT AND COUNTRY	ACREAGE				YIELD PER ACRE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
NORTH AMERICA												
Canada	68	95	92	93	1,132	981	1,071	1,118	770	932	985	1,040
Costa Rica	44	62	34	35	495	373	574	571	218	231	195	200
El Salvador	52	63	97	100	823	802	941	900	428	505	913	900
Guatemala	89	145	200	200	658	746	530	500	586	1,082	1,060	1,000
Honduras	70	76	125	125	397	329	296	296	278	250	370	370
Mexico	1,419	1,726	1,947	2,076	182	199	265	266	2,579	3,440	5,159	5,512
Nicaragua	40	42	50	50	250	240	352	352	100	101	176	176
Panama	12	15	26	25	417	360	488	500	50	54	127	125
United States	1,700	2,034	1,916	1,850	856	901	1,087	1,097	14,547	18,327	20,831	20,297
Cuba	125	125	150	146	760	706	667	664	950	883	1,000	970
Dominican Republic	80	80	82	80	568	571	511	500	454	457	419	400
Haiti	80	80	65	65	562	562	569	577	450	450	370	375
Total	3,779	4,543	4,784	4,845	567	588	661	647	21,410	26,712	31,605	31,365
EUROPE												
Austria	24	20	14	15	1,017	1,000	1,107	1,000	244	200	155	150
Belgium	9	7	2	2	1,389	1,811	1,445	1,481	125	125	32	26
Bulgaria	353	530	500	550	576	679	600	545	2,034	3,600	3,000	3,000
Czechoslovakia	53	41	25	25	1,019	1,044	516	508	540	428	129	127
France	424	395	371	348	724	530	637	310	3,069	2,092	2,365	1,080
Germany:												
Western Germany	5	5	14	13	1,402	1,428	1,223	1,385	73	71	170	180
Soviet Zone	5	9	7	8	1,108	1,121	774	750	51	100	57	60
Greece	63	60	78	100	584	583	715	600	368	350	558	600
Hungary	147	198	220	220	810	878	750	727	1,190	1,739	1,650	1,600
Italy	1,231	1,247	1,240	1,238	290	239	282	316	3,571	2,979	3,501	3,909
Netherlands	18	31	9	13	1,706	1,484	1,467	1,723	307	460	132	224
Portugal	415	696	981	951	206	130	92	65	856	907	904	617
Rumania	856	665	830	840	570	706	598	595	4,878	4,694	4,960	5,000
Spain	600	610	550	600	580	384	321	331	3,400	2,341	1,764	1,984
Sweden	2	1	3	3	1,653	1,302	1,510	1,094	36	18	48	35
Yugoslavia	360	350	425	425	779	977	769	753	2,804	3,420	3,270	3,200
Total (excl. U.S.S.R.)	4,565	4,865	5,269	5,351	516	484	431	407	23,546	23,524	22,695	21,792

TABLE 2.-*Beans, dry edible: Acreage, yield per acre, and production in specified countries, averages 1935-39 and 1940-44, annual 1948 and 1949*--Continued

CONTINENT AND COUNTRY	ACREAGE				YIELD PER ACRE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
ASIA												
Iran........................	385	410	500	500	312	317	280	280	1,200	1,300	1,400	1,400
Lebanon.....................	(2)	(2)	7	7	(2)	(2)	1,571	1,571	(2)	(2)	110	110
Syria.......................	(3) 1	(3) 5	3	6	(3)1,040	(3) 1,180	1,004	833	(3) 8	(3) 59	27	50
Turkey......................	185	227	245	233	751	843	837	712	1,390	1,914	2,050	1,658
Burma.......................	396	300	300	300	682	333	333	333	2,700	1,000	1,000	1,000
China.......................	6,250	5,000	4,000	4,000	450	480	550	550	28,100	24,000	22,000	22,000
Japan.......................	450	344	179	180	746	749	796	778	3,355	2,578	1,424	1,400
South Korea.................	100	90	86	85	806	778	402	412	806	700	346	350
Total.......................	7,767	6,376	5,320	5,311	484	495	533	527	37,559	31,551	28,357	27,968
SOUTH AMERICA												
Argentina...................	60	82	94	95	683	861	585	526	410	706	550	500
Bolivia.....................	58	60	62	60	1,241	1,333	1,371	1,417	720	800	850	850
Brazil......................	2,405	2,875	3,900	3,900	746	717	678	667	17,932	20,618	26,450	26,000
Chile.......................	214	213	195	200	815	752	822	800	1,744	1,602	1,602	1,600
Colombia....................	179	186	210	210	407	473	476	476	729	879	1,000	1,000
Ecuador.....................	9	9	10	10	778	833	850	850	70	75	85	85
Paraguay....................	23	10	8	8	304	700	938	938	70	70	75	75
Peru........................	58	60	62	60	690	750	758	792	400	450	470	475
Uruguay.....................	23	19	11	10	383	295	382	400	88	56	42	40
Venezuela...................	30	90	105	100	867	556	781	820	260	500	820	820
Total.......................	3,059	3,604	4,657	4,653	733	715	686	676	22,423	25,756	31,944	31,445
AFRICA												
Algeria.....................	1	1	3	3	526	443	467	333	6	6	14	10
Anglo-Egyptian Sudan........	4	4	8	10	1,075	865	1,125	1,000	52	83	90	100
French-Morocco..............	2	9	15	15	276	312	693	667	6	27	104	100
Madagascar..................	83	86	60	86	596	476	493	217	495	409	296	187
Angola......................	127	132	150	155	448	489	882	939	569	646	1,323	1,455
Union of South Africa.......	100	120	147	150	400	375	382	357	400	450	668	700
Total.......................	317	352	383	419	482	461	651	609	1,528	1,621	2,495	2,552
World total.................	19,487	19,740	20,413	20,579	546	553	574	559	106,466	109,164	117,096	115,122

[1] Preliminary. [2] Included with Syria. [3] Includes Lebanon.

Office of Foreign Agricultural Relations. Prepared or estimated on the basis of official statistics of foreign governments, reports of the U. S. Foreign Service officers, results of office research and other information. Years refer to year of harvest in the Northern Hemisphere and include; the harvest immediately following in the Southern Hemisphere. Averages are for years stated or for the nearest comparable period.

TABLE 3.-*Peas, dry edible: Acreage, yield and production in specified countries, averages 1935-39 and 1940-44, annual 1948 and 1949*

CONTINENT AND COUNTRY	ACREAGE				YIELD PER ACRE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
NORTH AMERICA												
Canada	85	88	82	58	948	982	1,080	966	806	864	886	560
Mexico	12	14	18	18	342	500	489	500	41	70	88	90
United States	223	509	292	378	1,152	1,309	1,227	904	2,570	6,665	3,584	3,418
Total	320	611	392	454	1,068	1,244	1,163	896	3,417	7,599	4,558	4,068
EUROPE												
Austria	10	10	7	6	1,220	1,200	1,429	1,383	122	120	100	83
Belgium	18	30	19	13	2,261	2,073	1,116	2,715	407	622	212	353
Bulgaria	3	8	10	10	966	758	700	700	30	60	70	70
Czechoslovakia	36	35	24	25	1,167	1,143	1,288	1,148	420	400	309	287
Finland	30	34	27	26	1,297	903	1,100	1,462	389	307	297	380
France	50	55	75	67	1,410	1,322	1,208	1,349	705	727	906	904
Germany: Western Germany	33	43	86	75	1,536	1,570	1,117	1,313	507	675	961	985
Soviet Zone	64	68	171	160	1,442	1,540	874	938	923	1,047	1,495	1,500
Hungary	73	172	55	71	1,084	1,131	1,009	986	791	1,945	555	700
Italy	59	51	45	46	678	535	538	533	400	273	242	245
Netherlands	98	87	57	52	2,431	1,914	1,233	2,808	2,382	1,665	703	1,460
Norway	2	3	2	2	1,713	935	2,116	2,000	39	25	53	50
Rumania	83	110	100	100	900	909	1,000	900	747	1,000	1,000	900
Spain	122	127	89	90	574	449	456	441	700	570	406	397
Sweden	34	58	36	35	1,329	1,159	1,408	1,286	452	672	507	450
United Kingdom	20	73	180	178	1,680	1,712	1,344	1,825	336	1,250	2,419	3,248
Yugoslavia	13	13	12	12	1,062	1,031	1,083	1,125	138	134	130	135
Total	748	977	995	968	1,268	1,176	1,042	1,255	9,488	11,492	10,365	12,147
ASIA												
Turkey	7	5	5	4	535	511	446	494	36	23	22	17
China	6,558	5,543	7,892	7,779	832	829	872	804	54,567	45,957	68,832	62,674
Japan	101	26	22	15	889	1,031	900	880	898	268	198	132
Total	6,666	5,574	7,919	7,818	833	830	872	804	55,501	46,248	69,052	62,823
SOUTH AMERICA												
Argentina	25	45	45	45	800	822	784	778	200	370	353	350
Chile	71	66	55	55	706	695	645	636	501	459	355	350
Uruguay	2	2	1	1	500	668	493	500	10	11	5	5
Total	98	113	101	101	726	743	706	698	711	840	713	705
AFRICA												
Algeria	18	35	23	23	544	291	461	452	98	102	106	104
French Morocco	79	123	170	170	533	519	591	588	421	638	1,005	1,000
Union of South Africa	13	20	25	25	923	650	744	760	120	130	186	190
Total	110	178	218	218	581	489	595	594	639	870	1,297	1,294
OCEANIA												
Australia	29	33	6	6	776	1,027	1,633	1,667	225	339	98	100
New Zealand	18	38	50	50	1,578	1,392	1,290	1,300	284	529	645	650
Total	47	71	56	56	1,083	1,223	1,327	1,339	509	868	743	750
World total	7,989	7,524	9,681	9,615	880	903	896	851	70,265	67,917	86,728	81,787

[1] Preliminary.

Office of Foreign Agricultural Relations. Prepared or estimated on the basis of official statistics of foreign governments, reports of the U.S. Foreign Service officers, results of office research and other information. Years refer to year of harvest in the Northern Hemisphere and include the harvest immediately following in the Southern Hemisphere. Averages are for years stated or for the nearest comparable period.

TABLE 4.-*Lentils: Production in specified countries, averages 1935-39 and 1940-44, annual 1948 and 1949*

CONTINENT AND COUNTRY	ACREAGE				YIELD PER ACRE				PRODUCTION (BAGS OF 100 POUNDS)			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
THE AMERICAS												
Mexico	5	6	7	7	412	420	594	500	22	23	44	35
Argentina	34	28	74	75	779	982	745	733	265	275	551	550
Chile	110	48	49	50	532	625	622	600	585	300	305	300
Total	149	82	130	132	585	729	692	670	872	598	900	885
EUROPE												
Bulgaria	15	26	25	25	987	677	680	680	148	176	170	170
Czechoslovakia	14	5	2	2	629	800	900	732	88	40	18	16
France	24	25	62	44	862	548	611	450	207	137	379	198
Greece	26	26	27	24	485	481	470	458	126	125	127	110
Italy	51	52	62	59	527	452	473	481	269	235	293	284
Rumania	29	37	35	35	521	532	543	543	151	197	190	190
Spain	55	104	128	125	533	407	345	353	293	423	441	441
Total	214	275	341	314	599	485	474	449	1,282	1,333	1,618	1,409
ASIA												
Iraq	50	70	18	18	264	296	283	278	132	207	51	50
Lebanon	3	4	5	5	833	769	937	959	25	32	46	47
Syria	66	103	114	115	1,180	674	640	565	779	694	730	650
Turkey	76	93	101	106	661	747	873	708	502	695	882	750
Total	195	270	238	244	737	603	718	614	1,438	1,628	1,709	1,497
AFRICA												
Algeria	6	24	41	80	386	296	627	529	25	71	257	423
Egypt	82	79	73	75	1,477	1,541	1,421	1,333	1,211	1,217	1,037	1,000
French Morocco	34	39	28	25	271	274	375	400	92	107	105	100
Spanish Morocco	1	2	2	2	470	523	500	500	6	10	10	10
Total	123	144	144	182	1,085	976	978	842	1,334	1,405	1,409	1,533
World total	681	771	853	872	723	644	661	684	4,926	4,964	5,636	5,324

[1] Preliminary.

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TABLE 5.-*Garbanzos: Acreage, production and yield per acre in specified countries,*

CONTINENT AND COUNTRY	ACREAGE				YIELD				PRODUCTION (BAGS OF 100 lbs.)			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
THE AMERICAS												
Mexico[2]......................	207	284	368	371	531	599	714	624	1,099	1,702	2,626	2,315
United States..................	3	7	1	4	567	571	400	600	17	40	2	24
Argentina......................	28	16	16	16	771	819	812	812	216	131	130	130
Chile..........................	26	23	25	25	412	387	580	580	107	89	145	145
Total......................	264	330	410	416	545	595	708	628	1,439	1,962	2,903	2,614
EUROPE												
Bulgaria.......................	4	29	25	20	675	914	880	1,000	29	265	220	200
Greece.........................	51	50	50	46	500	600	618	600	255	300	309	276
Italy..........................	241	240	274	269	348	289	417	520	838	694	1,142	1,400
Portugal.......................	83	89	94	91	325	320	282	224	270	285	265	204
Rumania........................	2	2	2	2	519	519	500	500	9	12	10	10
Spain..........................	631	1,010	872	900	482	318	197	294	3,040	3,216	1,715	2,646
Total......................	1,012	1,420	1,317	1,328	439	336	278	357	4,441	4,772	3,661	4,736
ASIA												
Middle East												
Lebanon......................	3	4	4	4	735	794	753	773	25	33	29	29
Syria........................	40	49	79	100	770	514	328	400	308	252	259	400
Turkey.......................	174	210	225	188	705	811	852	731	1,227	1,703	1,918	1,375
Total......................	217	263	308	292	719	756	716	618	1,560	1,988	2,206	1,804
Far East[3]												
India[4].....................	13,314	12,696	19,336	19,711	529	529	522	519	70,400	67,200	100,867	102,211
Pakistan.....................	1,633	1,942	2,688	2,919	444	421	484	603	7,258	8,176	13,000	17,600
Total......................	14,947	14,638	22,024	22,630	520	515	517	529	77,658	75,376	113,867	119,811
AFRICA												
Algeria........................	36	57	44	43	450	212	414	467	162	121	182	201
Egypt..........................	6	13	18	19	3,889	1,266	1,322	1,542	225	162	238	293
French Morocco.................	107	180	105	55	355	435	530	655	380	783	556	360
Spanish Morocco................	5	11	10	10	526	514	500	500	29	55	50	50
Tunisia........................	22	20	20	20	382	165	150	150	84	33	30	30
Total......................	176	281	197	147	500	411	536	635	880	1,154	1,056	934
Total specified countries...	16,616	16,932	24,256	24,813	517	503	510	524	85,978	85,252	123,693	129,899

[1] Preliminary. [2] About 60 percent of the Mexican crops are "porquero" type garbanzos used mostly for livestock feed in Mexico. [3] Includes large quantities of porquero type garbanzos (see footnote 2). [4] Figures for 1948 and 1949 include areas not reported in the previous periods.

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TABLE 6.- *Beans, broad and horse: Acreage, yield and production in specified countries, averages 1935-39 and 1940-44, annual 1948 and 1949*[1]

CONTINENT AND COUNTRY	ACREAGE				YIELD[2]				PRODUCTION (BAGS OF 100 LBS.)			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[3]	1935-39	1940-44	1948	1949[3]	1935-39	1940-44	1948	1949[3]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
THE AMERICAS												
Bolivia	10	11	11	10	1,307	1,182	1,200	1,300	128	130	132	130
Chile	2	2	3	3	1,239	981	667	667	25	24	20	20
Ecuador	25	25	27	30	244	240	259	250	61	60	70	75
Guatemala	2	3	4	4	1,448	800	625	625	24	24	25	25
Mexico	70	90	96	95	444	446	459	463	311	401	441	440
Total	109	131	141	142	504	488	488	486	549	639	688	690
EUROPE												
Belgium	23	8	7	11	2,230	1,849	1,900	2,055	513	146	133	226
Cyprus	6	6	7	7	1,046	1,000	792	714	67	60	53	50
Czechoslovakia	7	6	4	5	1,400	1,000	1,525	1,427	98	60	61	71
France	147	80	97	104	1,166	856	953	785	1,714	685	924	816
Greece	58	60	67	55	817	667	631	702	474	400	423	386
Italy	1,584	1,300	1,293	1,305	837	577	566	443	13,256	7,500	7,320	5,783
Netherlands	28	20	11	12	2,329	1,630	1,555	2,267	652	326	171	272
Portugal	136	147	128	125	649	547	661	394	883	804	846	492
Spain	454	357	350	360	722	662	657	667	3,279	2,364	2,300	2,400
United Kingdom	123	209	88	109	1,767	1,621	1,782	1,706	2,173	3,387	1,568	1,859
Total	2,566	2,193	2,052	2,093	901	717	672	590	23,109	15,732	13,799	12,355
ASIA												
China	6,931	6,935	7,353	7,099	960	947	914	852	66,535	65,675	67,224	60,502
Iraq	20	25	4	4	2,620	2,820	3,086	3,084	524	705	116	133
Japan	80	46	42	42	1,280	1,341	814	1,050	1,024	617	342	441
Lebanon	4	4	4	4	425	500	914	952	17	20	35	35
Syria	10	13	48	80	1,200	1,008	967	1,100	120	131	464	880
Turkey	173	130	116	115	730	679	722	496	1,263	883	838	570
Total	7,218	7,153	7,567	7,344	963	951	912	852	69,483	68,031	69,019	62,561
AFRICA												
Algeria	75	68	46	50	475	300	443	450	356	204	204	225
Egypt	408	400	413	440	1,598	1,630	1,533	1,607	6,521	6,521	6,330	7,069
French Morocco	150	194	84	90	365	434	423	284	548	842	355	256
Tunisia	71	83	85	85	758	425	412	412	538	353	350	350
Total	704	745	628	665	1,131	1,063	1,153	1,188	7,963	7,920	7,239	7,900
World total	10,597	10,222	10,388	10,244	954	903	874	815	101,104	92,322	90,745	83,506

[1] May include some green harvest particularly in the countries reporting high yields per acre. [2] In cases of small acreages, yields are based on unrounded estimates of acreage. [3] Preliminary.

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Consumption

Consumption of pulses in Europe is down at present because of the exchange situation. Substantial quantities of United States white beans and peas could be moved to importing countries, but since trade cannot be negotiated on a dollar basis these countries are forced to cut consumption of high quality beans and use more horse beans, in addition to low-grade beans from the Near East and Africa.

Trends

Some countries have attempted to become more nearly self-sufficient. England has increased its dry pea acreage tenfold since prewar, and other countries are attempting to put in greater acreages to cut down import requirements. Fresh vegetables are being substituted in many areas in the fall and winter, and these areas are using less dry pulses. Most of the European countries use substantial quantities of horse beans green, thereby reducing requirements for edible dry pulses.

OUTLOOK FOR UNITED STATES EXPORTS

Situation in the United States

Dry edible bean and pea handlers, distributors, and other interested people in the United States are not ordinarily so concerned with production and requirements for dry pulses outside this country as they are today. North American importers are normally interested in the available exportable supply of beans, peas, and lentils in Chile, and exporters are interested in requirements of Cuba, Puerto Rico, and other Caribbean Islands. At present, however, with a record crop of over 20 million 100-pound bags of dry edible beans (on a cleaned basis) produced in 1949, plus approximately 5½ million bags carry-over from previous crops, there is more enthusiasm for foreign market outlets. Roughly, we can utilize about 13½ million bags for food, 1½ million bags for seed, and about 1 million bags for export, using only 16 million bags of a 26 million supply. Supply and distribution of dry edible beans for calendar year 1929-49 may be seen in table 7.

European Imports

Imports of dry beans have been below normal for several years. There has been about 10 percent increase in population in western Europe since prewar which means that per capita consumption is considerably less than prewar.

It is generally true in most of western Europe that there are additional requirements for U.S. beans, principally of the Great Northern and pea bean (navy bean) classes. All European importers are well pleased with the U. S. No. 2 or better quality that has been exported. This grade is far superior to most of the beans now being obtained from such areas as Turkey, Angola, Belgian Congo, and North Africa. Importers generally are willing to pay considerably more for U. S. white beans. The Great Northern bean is especially liked because it cooks quickly and has a good flavor.

Quality and Grading

Due to the absence of quality standards in most of the European area, pulses are often marketed on an f.a.q. basis which varies greatly in different shipments. In

TABLE 7.-*Supply and distribution of dry edible beans (cleaned basis), by calendar years, 1929-49*

YEAR	SUPPLY				DISTRIBUTION									
	PRODUCTION[1]	BEGINNING COMMERCIAL STOCKS[2]	IMPORTS[3]	TOTAL SUPPLY	ENDING COMMERCIAL STOCKS[2]	SEED	COMMERCIAL EXPORTS AND SHIPMENTS[3]	U. S. DEPT. OF AGRICULTURE				MILITARY	CIVILIAN	CIVILIAN PER CAPITA
								BEGINNING STOCKS	ENDING STOCKS	SHIPMENTS	NET PURCHASES FOR EXPORT			
	Million pounds	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Pounds*
1929	1,156	450	146	1,752	640	115	45	–	–	–	–	–	952	7.8
1930	1,354	640	126	2,120	780	131	38	–	–	–	–	–	1,171	9.5
1931	1,197	780	48	2,025	760	129	44	–	–	–	–	–	1,092	8.8
1932	1,041	760	18	1,819	740	108	46	–	–	–	–	–	925	7.4
1933	1,206	740	20	1,966	910	120	47	–	–	–	–	–	889	7.0
1934	1,065	910	25	2,000	690	127	39	–	–	–	–	–	1,144	9.0
1935	1,334	690	46	2,070	830	132	37	–	–	–	–	–	1,071	8.4
1936	1,077	830	21	1,938	620	125	43	–	–	–	–	–	1,150	8.9
1937	1,494	620	66	2,180	1,000	130	43	–	–	–	–	–	1,007	7.8
1938	1,472	1,000	16	2,488	1,060	125	54	–	–	–	–	–	1,249	9.6
1939	1,426	1,060	14	2,500	1,070	124	90	–	–	–	–	–	1,216	9.2
1940	1,579	1,070	14	2,663	1,290	135	134	–	–	–	–	–	1,104	8.3
1941	1,710	1,290	26	3,026	1,270	146	110	–	88	206	294	60	1,146	8.6
1942	1,757	1,270	27	3,054	983	151	59	88	208	133	253	140	1,468	11.1
1943	1,944	983	121	3,048	896	182	22	208	445	361	598	194	1,156	8.9
1944	1,506	896	69	2,471	644	176	19	445	350	329	234	398	1,000	7.7
1945	1,195	644	34	1,873	448	146	65	350	25	232	-93	309	998	7.7
1946	1,474	448	20	1,942	[4]503	140	48	25	–	63	38	12	1,201	8.6
1947	1,604	355	30	1,989	637	151	185	–	0	23	23	75	918	6.4
1948	1,954	637	26	2,617	1,200	145	136	0	0	140	140	40	956	6.5
1949	2,006	1,200	35	3,241	1,750	147	117	0	0	20	20	96	1,111	7.5

[1] Official estimates. Data for 1947 and 1948 have been adjusted to include 26 million pounds and 12 million pounds, respectively, of broken beans which were exported under the military civilian feeding programs in occupied areas during the corresponding year.

[2] Stocks on farms and in commercial warehouses. For the years 1929-41 and 1946-49, January 1 stock estimates for each year are estimated, based on official reports on sales of old crop beans after January 1, plus estimates of home-grown seed saved from the previous crop, and estimates of farm home consumption of beans from the previous crop, and estimated carry-over stocks on the following September 1. Stocks on January 1, 1942, are an official estimate. January 1 stocks for the years 1943-45 represent interpolations based on official reports for December 1 of the preceding year and March of the corresponding year.

[3] Derived from "Foreign Commerce and Navigation of the United States" and other reports of the U. S. Department of Commerce.

[4] Ending stocks for 1946 and beginning stocks for 1947 differ because of a new method used.

Compiled from data published by the Bureau of Agricultural Economics.

the United States, official U. S. Standards are available for dry edible beans, peas, split peas and lentils, which makes it less difficult to purchase uniform quality. See Appendix for grade requirements of the different commodities. Complete standards of the above commodities may be obtained from the United States Department of Agriculture upon request.

Some canned Great Northerns were imported by Belgium and other countries and, although very few canned beans are used in Europe, some families liked this product very much. European people like a soup bean that will "mush up" and the Great Northern is adapted to the practice of putting the beans through a colander or sieve to make a bean puree. It does seem that the Great Northern bean probably is rated higher than any other dry bean used in Europe.

There is a definite shortage of large yellow peas in Europe. About 1½ million bags of high quality yellow peas are produced in the Russian area of Germany and are not now available to Western Europe. A large white (yellow) pea of the U. S. marrowfat type is desired. Since a large share of the peas are decorticated (shelled) this class of pea is desirable because the seed coat is easily removed and the product is polished with a minimum of waste. Apparently white Canada, first and best, and Colorado white peas are not so satisfactory for milling as the offal from these classes is much greater than from the large smooth varieties. (See table 3.)

Packaged Beans

It is apparent that it will be a long time before the marketing of dry beans in cellophane or window-front consumer-sized packages makes any headway in Europe. A number of importers have tried cellophane or window-front packages with discouraging results. Some people did indicate, however, that if it were only possible to get consumers to buy in packages that the practice would continue. The present practice is to market the beans in open 50- or 100-kilo bags (110.2 lbs. or 220.5 lbs.) at so much per kilo to be weighed while the customer watches.

Dry Edible Beans

The common bean is now grown in three fairly well-defined regions as a dry bean crop in the United States. Pea beans (navy) are grown mostly in Michigan, and light red kidney beans in New York. The cranberry and yelloweye bean production is also important in Michigan, and a few miscellaneous beans such as marrow, white kidney, brown Swedish, and black turtle-soup bean are grown in New York.

In the Mountain States, the production of Great Northern beans is important in Idaho, Montana, Wyoming, Colorado, and western Nebraska. Pinto production is important in Colorado and New Mexico, and small reds (red Mexican) are very important in southern Idaho. (See tables 8 and 9.)

In California, a third dry bean area is important for the production of pintos, cranberry, small whites and pinks of the *Phaseolus vulgaris* types, blackeyes of the *Vigna sinensis* group, and standard and baby limas of the *Phaseolus lunatus* group. The production of the lunatus bean is limited to the United States and Madagascar, while the vulgaris types are important in all parts of the world. In Europe important vulgaris types are haricot, lingot, flageolet, brown Swedish, cannellini, pearls, saluggia, and borlotti.

TABLE 8.-*Production of dry edible beans (cleaned) in 100-pound bags, by classes, United States, crop years 1948 and 1949*

CLASS	PRODUCTION											
	NEW YORK		MICHIGAN		NEBRASKA		MONTANA		IDAHO		WYOMING	
	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Pea and medium white	360	274	4,076	5,101	–	–	–	–	24	33	–	–
Great Northern	–	–	–	–	1,385	1,170	276	242	1,363	954	1,067	799
Small white	–	–	–	–	–	–	–	–	–	–	–	–
White marrow	140	69	–	–	–	–	–	–	–	–	–	–
White kidney	11	9	–	–	–	–	–	–	–	–	–	–
Pinto	–	–	–	–	34	30	–	–	259	569	110	270
Red kidney	1,533	1,123	40	169	–	–	–	–	–	–	–	–
Pink	–	–	–	–	–	–	–	–	–	–	–	–
Small red	–	–	–	–	–	–	–	–	471	507	–	–
Cranberry	–	–	111	406	–	–	–	–	–	–	–	–
Yelloweye	23	29	31	77	–	–	–	–	–	–	–	–
Standard lima	–	–	–	–	–	–	–	–	–	–	–	–
Baby lima	–	–	–	–	–	–	–	–	–	–	–	–
Blackeye, California	–	–	–	–	–	–	–	–	–	–	–	–
Garbanzo	–	–	–	–	–	–	–	–	–	–	–	–
Other	11	36	–	–	–	–	11	11	296	284	20	20
Total	2,078	1,540	4,258	5,753	1,419	1,200	287	253	2,413	2,347	1,197	1,089

CLASS	COLORADO		NEW MEXICO		CALIFORNIA		OTHER		UNITED STATES	
	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Pea and medium white	–	–	–	–	–	–	21	15	4,481	5,423
Great Northern	–	–	–	–	–	–	–	–	4,091	3,165
Small white	–	–	–	–	734	625	–	–	734	625
White marrow	–	–	–	–	–	–	–	–	140	69
White kidney	–	–	–	–	–	–	–	–	11	9
Pinto	2,060	2,312	405	520	112	101	107	106	3,087	3,908
Red kidney	–	–	–	–	182	155	4	3	1,759	1,450
Pink	–	–	–	–	556	634	–	–	556	634
Small red	–	–	–	–	17	39	–	–	488	546
Cranberry	–	–	–	–	24	40	–	–	135	446
Yelloweye	–	–	–	–	–	–	57	43	111	149
Standard lima	–	–	–	–	1,144	1,376	–	–	1,144	1,376
Baby lima	–	–	–	–	984	1,272	–	–	984	1,272
Blackeye, California	–	–	–	–	1,087	318	–	–	1,087	318
Garbanzo	–	–	–	–	2	24	–	–	2	24
Other	86	72	3	4	118	112	65	106	610	645
Total	2,146	2,384	408	524	4,960	4,696	254	273	19,420	20,059

Compiled from data published by the Bureau of Agricultural Economics.

TABLE 9.-*Production of dry edible beans (uncleaned), in 100-pound bags, by classes, crop years, 1940 through 1949*

CLASS	PRODUCTION									
	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Pea beans[1]	4,291	5,357	5,393	5,568	4,667	3,032	3,999	3,372	4,675	5,646
Great Northern	1,900	2,358	3,096	4,048	2,694	2,724	3,742	3,910	4,410	3,500
Small white	666	972	815	678	515	424	391	553	798	679
White marrow	117	156	169	88	54	56	48	50	148	74
White kidney	43	49	54	29	15	6	10	10	12	10
Red kidney	699	1,243	924	690	613	594	1,290	1,164	1,841	1,538
Small red	374	389	361	402	309	249	338	535	533	604
Cranberry	280	255	299	288	126	107	80	78	142	458
Pink	875	586	572	530	299	299	378	515	625	705
Yelloweye	102	106	146	161	118	76	85	86	117	159
Pinto	3,628	3,306	3,324	4,084	3,081	2,187	2,309	3,491	3,343	4,199
Blackeye, California	1,154	704	733	896	444	452	436	694	1,175	346
Standard lima	1,290	1,326	1,355	1,335	1,191	979	841	919	1,243	1,504
Baby lima	875	915	825	1,128	1,012	1,083	1,159	1,184	1,081	1,390
Garbanzo	34	42	45	51	30	38	39	31	2	27
Other	617	792	876	1,026	979	777	714	626	682	715
Total	16,945	18,556	18,987	21,002	16,147	13,083	15,859	17,218	20,827	21,554

[1] Includes small flat white in Idaho and medium white.

Compiled from Bureau of Agricultural Economics, Crop Reporting Board releases.

European Production of Dry Beans

In Europe, on the basis of 15 countries, the 1949 crop was about 21.8 million bags compared with 22.7 million bags in 1948. This production is about 7 percent or 1.8 million bags below prewar averages. Bean production has been below prewar levels in Europe for several recent years.

The decline in production has been due to unfavorable weather conditions for one thing, but a number of conditions have caused lower yields. Poor rotations and lack of fertilizer have been very noticeable in most areas. The dry bean acreage of 5.4 million acres in 1949 was actually about 17 percent greater than the 4.6 million prewar acreage. Prewar yields of 516 pounds per acre compare with 431 pounds in 1948 and only 407 pounds in 1949.

Dry Edible Peas

Production of dry field peas, *Pisum sativum,* is very important in England, the Netherlands, Belgium, and Germany. In the United States most of the dry pea production is in the Palouse area (eastern Washington, northern Idaho, and northeastern Oregon). The Alaska, white Canada, and first and best classes are grown there. (See tables 10 and 11.) In Colorado, the Colorado white and chang varieties are produced on limited acreages. The white marrowfat pea is grown principally in northwestern Washington. However, in the last few years because of low yields, the acreage has been reduced considerably.

World Production of Dry Peas

The 1949 world production of dry peas reported from 31 countries is estimated at 82 million bags or about 5 million below the record crop of 87 million bags for 1948. In Europe the greatest change in dry pea production has been in the increased importance of this commodity in the United Kingdom. The production has increased tenfold since prewar and England has been able to curtail large imports from the Netherlands, Sweden, and Belgium. The per capita consumption of dry peas relative to that of dry beans is higher in Europe than in the United States. Not all of the dry peas used for food in northern Europe are as smooth as those in the United States. The marrowfat (semi wrinkled bicolored) peas grown in the Netherlands and England are very important and are used for canning dry as well as for use in soups and vegetable dishes. Probably more dry peas are canned (dry soakers) in England than in any other country.

Broad Beans

The broad and horse beans *(Vicia faba)* are used in most of Europe for both food and feed. The pods are usually picked green as needed for food, and when ripe the remainder are harvested for feed. *Vicia faba* is one of the oldest types of beans recorded in history. It is said to have been introduced into China about 3000 B.C. and is probably native to northern Africa and southwest Asia. See table 6, indicating important producing countries.

Lentils

Historical and biblical references frequently are made to the use of lentils *(Lens esculenta)* as a prominent article of food among the peoples of south and west

TABLE 10.-*Production of commercial classes of dry field peas (uncleaned), in 100-pound bags, by crop years United States, 1942-49*

YEAR	PRODUCTION			
	ALASKA AND OTHER SMOOTH GREEN KINDS	WHITE CANADA, FIRST AND BEST, AND OTHER YELLOW AND WHITE SEEDED KINDS	OTHER KINDS EXCEPT AUSTRIAN WINTER	TOTAL PRODUCTION
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*
1942	4,722	704	1,976	7,402
1943	7,726	1,210	1,967	10,903
1944	6,458	1,186	1,250	8,894
1945	3,739	800	1,376	5,915
1946	4,505	790	1,463	6,758
1947	4,144	857	1,512	6,513
1948	2,318	454	808	3,580
1949	1,976	550	741	3,267

Compiled from Bureau of Agricultural Economics, Crop Reporting Board releases.

TABLE 11.-*Production of commercial classes of dry field peas (cleaned), in 100-pound bags, by States, crop years 1948 and 1949*

STATE	PRODUCTION							
	ALASKA AND OTHER SMOOTH GREEN KINDS		WHITE CANADA, FIRST AND BEST, AND OTHER YELLOW AND WHITE SEEDED KINDS		OTHER		TOTAL	
	1948	1949	1948	1949	1948	1949	1948	1949
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Montana	19	20	–	–	74	49	93	69
Idaho	401	442	45	62	264	313	710	817
Colorado	4	–	169	225	5	–	178	225
Washington	1,706	1,355	56	72	69	53	1,831	1,480
Oregon	11	8	32	23	163	58	206	89
California	–	–	64	75	94	112	158	187
Other	–	–	41	37	45	69	86	106
United States	2,141	1,825	407	494	714	654	3,262	2,973

Compiled from Bureau of Agricultural Economics, Crop Reporting Board releases.

Asiatic and Mediterranean countries. About 80 percent of the world lentil production in 1949 was in the Mediterranean area which reported 4.4 million bags on 740,000 acres. About 900,000 bags were produced on 132,000 acres in Chile, Argentina, and Mexico. Spain, Italy, France, and Greece produced over a million bags in 1949. Turkey and Syria are more important sources of lentils than Europe, while Algeria, Egypt, and Morocco in North Africa also have exportable surpluses. Some areas in Europe use more lentils than beans or peas. This is reported to be true of Paris, France. A few million pounds of lentils are grown in Idaho and Washington in the United States, but the major part of the United States requirements are imported from Chile.

The average yield of lentils in Europe was down to 449 pounds per acre in 1949 compared with 474 pounds in 1948 and 599 pounds the 1935-39 average. This was probably due to the same reasons that caused a decline in bean production; that is, in addition to dry weather, crop rotation and use of fertilizers have been neglected. Production and acreage figures may be seen in table 4.

Garbanzos

The garbanzo or chickpea *(Cicer arietinum)* is native to western Asia, but has been cultivated in Mediterranean countries since ancient times. The production of garbanzos in Europe in 1949 amounted to 4,736,000 bags, compared with a crop of 3,661,000 bags in 1948, which is comparable to the prewar averages. Spain is the most important garbanzo producing country in Europe. Except for the short crop of 1948, Spain's garbanzo crops have been larger than the Mexico crops.

Turkey and Syria together usually produce around 2 million bags, and Algeria, Egypt, and Morocco together usually produce about 1 million bags. India and Pakistan produce large quantities of garbanzos, a large share of which are grown only for feed.

Miscellaneous Minor Pulses

In different parts of Europe there is limited use of scarlet runner beans *(Phaseolus coccineus)*. This type is especially important in the British Isles. Its culinary use is confined to snap pods and green shells, and it takes the place of limas which do not develop successfully in the cooler climates.

The hyacinth bean *(Dolichos lablab)* is often referred to as Lablab, the Egyptian name originally used. A native of India, it is commonly grown and utilized in tropical and subtropical Asiatic countries much as snap beans, and it has been referred to as "the kidney bean of the Asiatics." Some of these beans have been imported from Egypt by Germany for decorticating and sale locally. These beans were distributed without rationing restrictions. (See figure 23.)

Lupines *(Lupinus spp.)* have been used in Mediterranean countries for soil improvement, fodder, and human food. Some species contain a rather high content of bitter alkaloids requiring long soaking in water to remove these elements. In recent years sweet lupines are being grown in some European countries in a limited way and may encourage consumption of this pulse.

Some species of vetch *(Vicia spp.)* are edible and are used to some extent in the Mediterranean area. A few varieties of vetch are shown in figure 31.

CLASSES OF IMPORTANCE IN THE UNITED STATES

Beans

White Beans

1. *Pea beans* (navy): Small white type, rounded, like European pearl bean and Chilean arroz. The production of pea beans has exceeded all other classes for the 1948 and 1949 crops. The 1949 crop was 5,423,000 bags of 100 pounds (cleaned basis) or 27 percent of all dry beans produced. In 1948 a crop of 4,481,000 bags (23 percent) was produced. This class is used principally for canning as this bean has a tendency to hold its shape when baked. Ninety-four percent of the country's pea beans were produced in Michigan in 1949 with most of the remainder being produced in New York State.

2. *Great Northern:* These are medium large, white, a flattened kidney shape, and thin-skinned. They are liked very much throughout the United States and Europe. They are well-adapted for packaging in transparent film for consumer trade. The Great Northern resembles the blond flageolet in size. In 1949 production was 3,165,000 bags (cleaned basis) or about 15 percent of the total dry bean crop. However, in 1947 a crop of 3,919,000 bags (uncleaned) was about 23 percent of the total dry bean crop and the greatest production of any class for that year. The production is principally in southern Idaho, western Nebraska, Wyoming, and Montana.

3. *Small White:* A small, slightly-flattened and slightly-elongated bean with very bright smooth seedcoat. This bean is smaller than the Michigan pea bean or Chilean arroz. It is well adapted for canning and is preferred by the New England people for baked bean dishes. It is grown only in California. A crop of 625,000 bags was produced in 1949; that was only about 3 percent of the total dry bean crop but the small white does play an important part in the white bean markets.

4. *White Marrow:* A large white, tumid bean, larger than Chilean cristales and Italian cannellini. Only 140,000 bags were produced in 1948 and 69,000 bags in 1949 so the white marrow is relatively unimportant but is grown for a special trade. The production is all in the Finger-Lake area of western New York State.

5. *White Kidney:* A large, kidney-shaped seed similar to white cannellini produced in Italy. The production of this bean has been decreasing gradually in western New York State until only about 10,000 bags are harvested annually. The production is usually supplemented by small imports of cannellini beans from Italy for the Italian trade.

Colored Beans

6. *Pinto:* This seed is about the size and shape of the Great Northern with brownish blotches and streaks over grey. The grey turns a bit pink and then darker on ageing. This is the most important class of colored beans produced in the United States. The crop of 3,908,000 bags produced in 1949 was about 19 percent of total United States dry bean production. This class is produced principally in Colorado, New Mexico, Idaho, and California and is used principally by the people from Spanish-speaking areas. It is used in chili dishes throughout the South. Practically no pinto beans or similar beans are used in Europe.

FIGURE 3.- Speakers at the national dry edible bean meeting held in January 1950 at Atlantic City, New Jersey, where the author made a preliminary report on the dry bean situation in Europe. Shown left to right are the author; Fred Entermille, Production and Marketing Administration, United States Department of Agriculture; Grant Hartman, President, Mountain States Bean Company, Denver, Colorado, and Robert R. Wilson, President, Potts Wilson Company, Fort Worth, Texas.

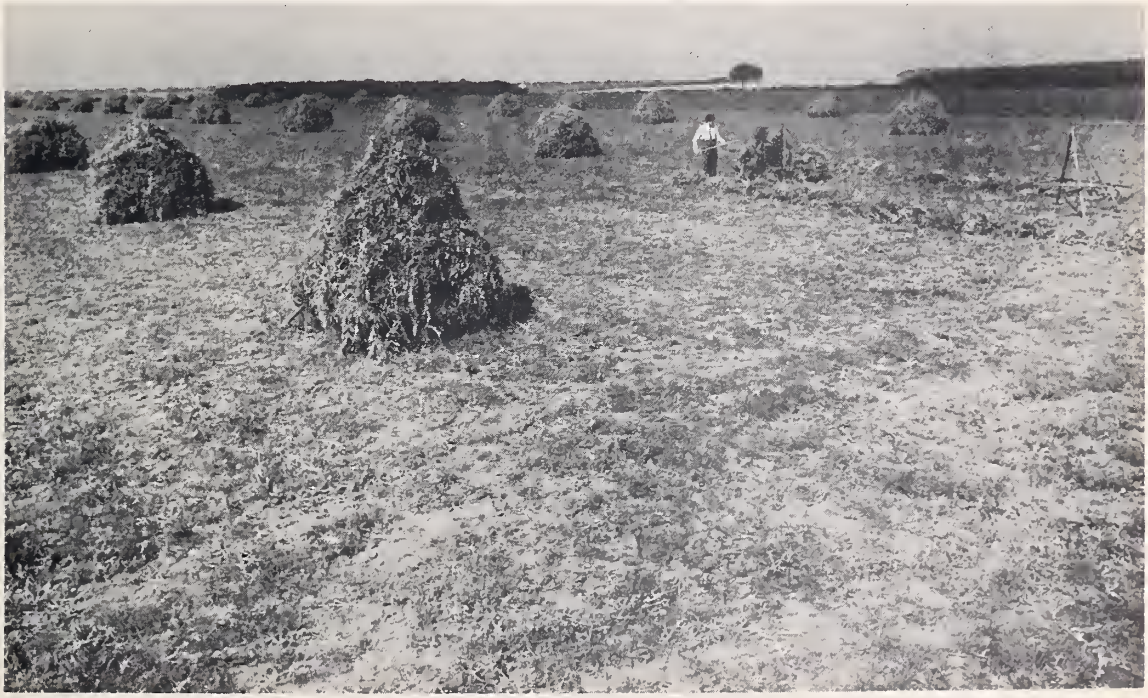


FIGURE 4.- Peas being stacked on quadrupods for curing in the field. This method is used considerably in Europe, especially in England. Stacking peas in this manner prevents spoilage and makes the vines ready for threshing or carting from the field is a shorter time.

UNITED STATES: CLASSES OF COLORED BEANS

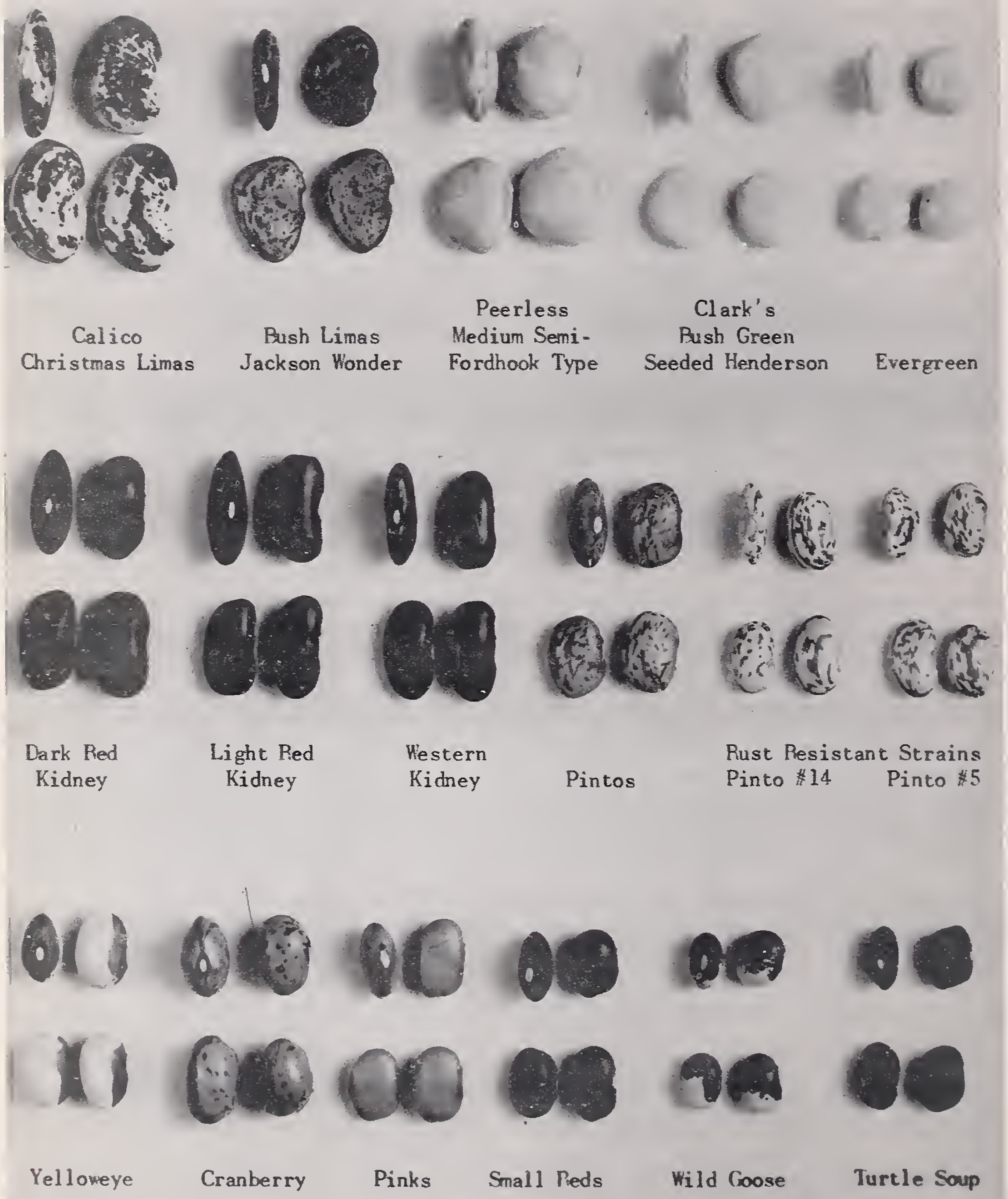


Figure 5

(Natural size)

UNITED STATES: CLASSES OF PEAS AND MISCELLANEOUS TYPES OF DRY EDIBLE PULSES

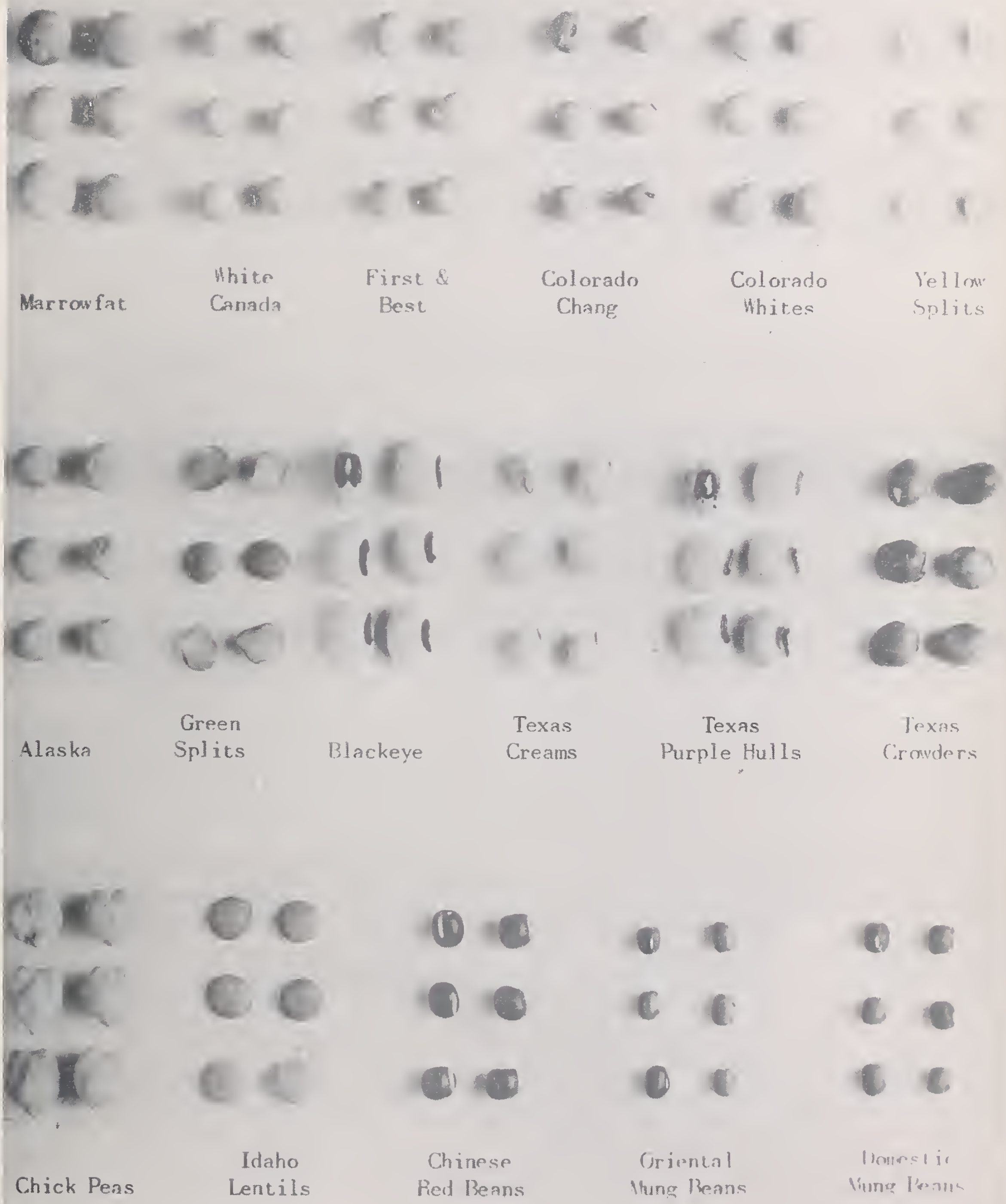
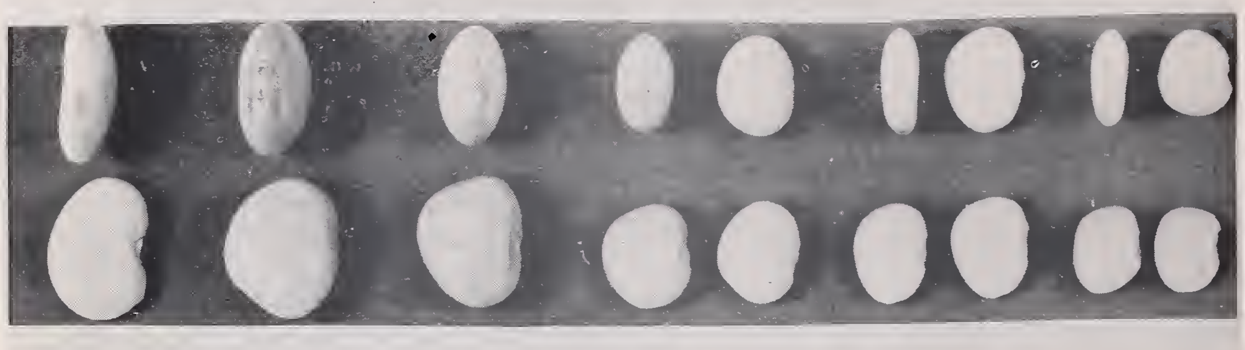


FIGURE 6

(Natural size)

UNITED STATES: CLASSES OF WHITE BEANS



Commercial Standard

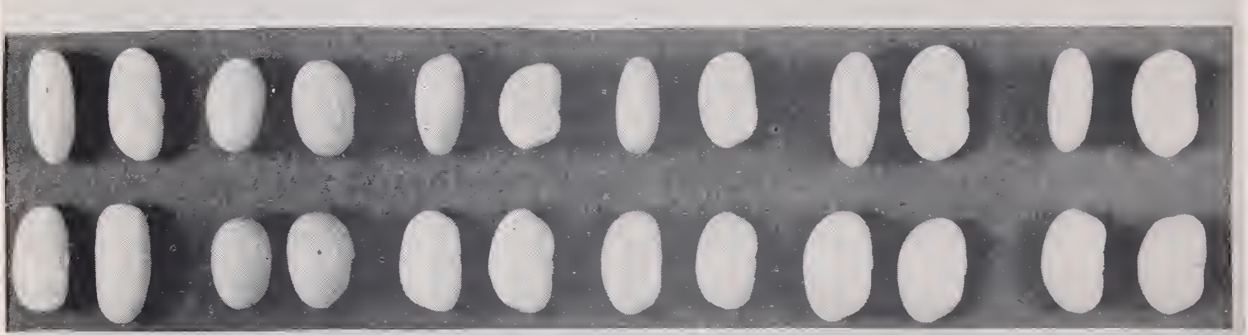
Potato Fordhook

Fordhook No. 242

Triumph Small Semi Fordhook

Henderson Bush

Baby Fordhook



White Kidney

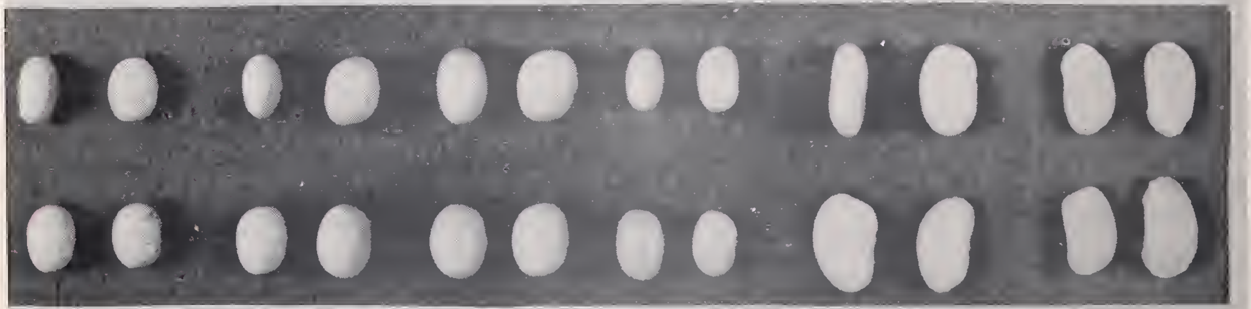
Marrow

Great Northern No. 123

Great Northern No. 16

Great Northern No. 31

Commercial Great Northern



Michelete

Robust

Rainy River

Small White

Idaho Flat Types Small Whites

White Splits

Figure 7

(Natural Size)

7. *Red kidney:* There are 3 classes grown. Western red kidney beans are grown in California, light red kidney in New York, and dark red kidney is grown principally in Michigan. The seed is relatively large, slightly flattened, and kidney shaped. The western and light red types are quite pink when first harvested, turning darker with age, and the dark red kidney is a deep maroon color. The light red type is the most important. New York State produced about 80 percent of the 1,450,000 bags of all red kidneys produced in 1949 in the United States. These beans are used to some extent for canning, and have a wide distribution in the United States. New Orleans is a very important market, and substantial quantities are ordinarily exported to Cuba, Puerto Rica, and the Caribbean area.

8. *Pink bean:* This bean is medium sized and somewhat flattened with square ends. It is grown in California and marketed mostly in the South. Some 634,000 bags were produced in 1949 or about 3 percent of the total dry bean crop.

9. *Small red:* The seed is red, medium in size, and slightly flattened. This is not an important class but about 500,000 bags are produced each year. About 90 percent of this crop is produced in Idaho (507,000 bags of 546,000 bags in 1949). This bean is used extensively in chili dishes.

10. *Cranberry:* This bean is pinkish tan in color covered with red blotches. It is large, tumid, and meaty and compares with borlotti and saluggia beans of Italy. This bean is produced in Michigan and California and is consumed principally in coal mining areas. A crop of 446,000 bags was produced in 1949.

11. *Yelloweye:* This is a white bean with a yelloweye or yellow splotch around the hilum. It is about the same size as the white marrow and is very plump in shape. This class is grown principally in Michigan with some grown in New York, and a slightly different variety is produced in New England. A total crop of 149,000 bags was produced in 1949.

12. *Blackeye:* This is of the cowpea family *(Vigna sinensis)* but the variety grown in California is produced and used as dry beans and is classified under the dry edible bean standards as a dry edible bean. The blackeye has a rather wrinkled seed coat. The variety produced in California is larger and a much superior bean to any produced in the Mediterranean area. Only 318,000 bags were produced in California in 1949; this was about one-half the normal crop. The blackeye is used mostly by people of the southern states.

Lima Beans

13. *Standard lima:* This bean *(Phaseolus lunatus)* is a large white flattened, sub-circular bean like the Madagascar lima. The Madagascar bean seems to be a little larger and is said to contain more sugar. About 1,376,000 bags of standard limas were produced in California in 1949. This bean has a wide distribution in the United States. In the South it is often referred to as butter bean. A large part of the crop is marketed in 1- or 2-pound cellophane bags.

14. *Baby lima:* This is a small lunatus species similar to the white baby lima produced to some extent in Spain on the Portuguese border. A United States crop of 1,272,000 bags was produced in 1949. This bean is used extensively throughout the Southern States.

Miscellaneous Classes

15. *Brown Swedish:* This variety is said to have been brought to America by early Swedish immigrants and is about the same as the brown Swedish bean of northern Europe today. The seed is small to medium, oblong-oval, with plump ends rounded to truncate. The color is light brown. They are grown to some extent in Michigan and New York.

16. *Black turtle soup:* This seed is small, quite flattened with ends abruptly rounded or decidely flattened or squared. The color is jet black. This bean is not very important in the United States but is grown to some extent in New York State for special trade.

Peas

1. *Alaska:* This medium-sized, round, slightly dimpled, bluish-green pea is sometimes referred to as Earliest of All. It made up over 60 percent of the 2,973,000 bags of dry peas produced in 1949. It is used extensively in planting acreages for canning and for early home garden plots. It is the main source of green split peas. Very few dry Alaska peas are used whole for food in the United States.

2. *White Canada, First and Best, Colorado white and marrowfat peas:* Are the important classes of white (yellow) peas grown in the United States. Production of these classes was only 16 percent of the total 1949 crop of dry peas. Marrowfat peas are large, round, slightly creamy, and make a very large orange split pea. This class is liked by European millers because of less waste in milling, and it is especially adapted for decorticating.

Lentils

Lentils: A medium-sized, disc-shaped, slightly greenish lentil is produced in north Idaho and eastern Washington and is packaged and used extensively in the United States although production must be supplemented by imports from Chile.

Garbanzos

Garbanzos: The California garbanzos (chickpeas) are similar to those produced in Mexico or Spain. A few thousand bags are produced each year in California and production is supplemented by imports from Mexico.

For examples of United States types of the above pulses see figures 5 through 7.

CLASSES OF IMPORTANCE IN EUROPE

European classes of beans: Varieties of beans in Europe apparently are not so much of pure-line inheritance as some of the American types named above. A few varieties such as the Dutch brown, cannellini, flageolet, saluggia, and borlotti, are examples of more important classes that have been grown according to type. It is not uncommon to see great variations in size and type of beans found in different samples.

Classes of dry peas: The Dutch blue or green pea is the only green pea of importance grown in Europe. High quality white peas are grown in Denmark and Sweden but apparently without variety designation. The Netherlands green (Dutch blue) is of very excellent quality when produced in the Netherlands, Belgium, and England.

Dutch Marrowfat: The Dutch marrowfat is a large semiwrinkled, bicolored pea used extensively in the north of Europe and the United Kingdom. This variety is said to be of good quality for canning as well as for green manure and pasture.

Lentils: This pulse is a very important food in the Mediterranean countries and western Europe. Several varieties are produced and vary in size and color.

SITUATION BY COUNTRIES

Sweden

Acreage and Production

The production of dry beans in Sweden is not sufficient to meet requirements, although the acreage in 1948 and 1949 was well above 1946 and 1947 or the 1936-41 average. The acreage of edible peas continued on a downward trend in 1949 while the area used for feed peas was substantially higher in a continued upward trend. Plant growth was checked by cold weather in June and later by dry weather. Yields of dry peas were therefore below average. The continued acreage shifts together with yields for edible peas, feed peas, and dry beans are indicated in table 12.

TABLE 12. *Sweden: Acreage and production of pulses in 1949 with comparisons*

YEAR	ACREAGE			PRODUCTION		
	EDIBLE PEAS	FEED PEAS	DRY BEANS	EDIBLE PEAS	FEED PEAS	DRY BEANS
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*
1941-45	59	13	1	672	143	15
1946	43	14	1	534	169	13
1947	39	15	1	401	152	7
1948	36	20	3	507	229	48
1949[1]	34	22	3	450	287	35

[1] Preliminary.

Consumption

It is reported that the normal consumption of edible peas is about 225,000 bags and has been slightly on the decline. The annual requirement of dry beans is around 65,000 bags. Traditionally whole yellow peas are served on Thursday both in the home and in hotels and restaurants. Practically all of the peas used are whole so there is no market for split peas. Also, brown beans are traditionally eaten on Tuesdays and during the Christmas holidays. About 4 pounds of peas and 1 pound of beans are consumed per capita annually.

Trade

The production of yellow peas is above requirements so Germany, Norway, England, Switzerland, and Poland have been importing from Sweden. Sweden is self-sufficient in yellow peas, but does import green peas from the Netherlands for planting about 20,000 acres of land for feed annually. Very few beans are produced in Sweden (only about 35,000 bags in 1949) so brown beans are imported from the Netherlands. Some light red kidney beans imported from Chile and the United States also have been used. Two thousand tons of U. S. red kidney beans were used during the war and Sweden was well pleased with the quality. (See figure 12.)

Support Program on Peas

The price of peas will be held, by agreement between the farm organization and the government.

The Netherlands

Dutch green peas are the most important of the dry pulse crops in the Netherlands. Of the 52,000 acres of dry peas in 1949, about 39,000 acres were of the Dutch green or Dutch blue types. This compares with 48,000 acres in 1948, about 58,000 acres in 1947, around 64,000 in 1946, and 105,000 acres in 1937. The decline of Dutch green pea production since 1939 has been due to higher support prices on other crops, and growers have gradually shifted to more profitable crops. The 8,200 acres of green marrowfat peas planted in 1949 were double the area planted to this class of peas in 1948 and more than 3 times the 1946 acreage of 2,700. The production of capucyner (grey marrowfat) and brown marrowfats has also decreased since 1939. Acreage of the different classes of pulses for 1939, 1946, 1947, 1948, and 1949 are indicated in table 13.

The production and acre yields of dry peas, beans, and horse beans are indicated in table 14. A very high average yield of 2,808 pounds per acre was recorded for the Netherlands dry pea production in 1949. This is the highest average acre yield of any of the dry pea producing countries. Belgium has a 1949 yield of 2,715 pounds per acre. However, both countries had very low 1948 yields. An average of only 1,233 pounds per acre of dry peas was harvested in the Netherlands compared with an average yield of 2,431 pounds for the 1935-39 period.

The acre yield in 1949 was higher in the Netherlands for both dry beans and peas than in any other country for which a record is available. Netherlands yields of broad and horse beans were exceeded in 1949 only by Iraq.

Bean Production

The Netherlands produce about twice as many Dutch brown beans as required. Sweden and Norway usually import most of the exportable surplus. For the period 1935-37 Sweden took an average of about 5½ million pounds of brown beans per annum. In 1948 about 1.0 million pounds were exported to Sweden from a very short crop. The 1949 export figures are not yet available.

There are two principal kinds of white beans grown. (See figure 11.) In the North a white bean known as roundback (similar to U. S. white kidney type) is grown

NETHERLANDS: CLASSES OF BEANS PRODUCED OR IMPORTED

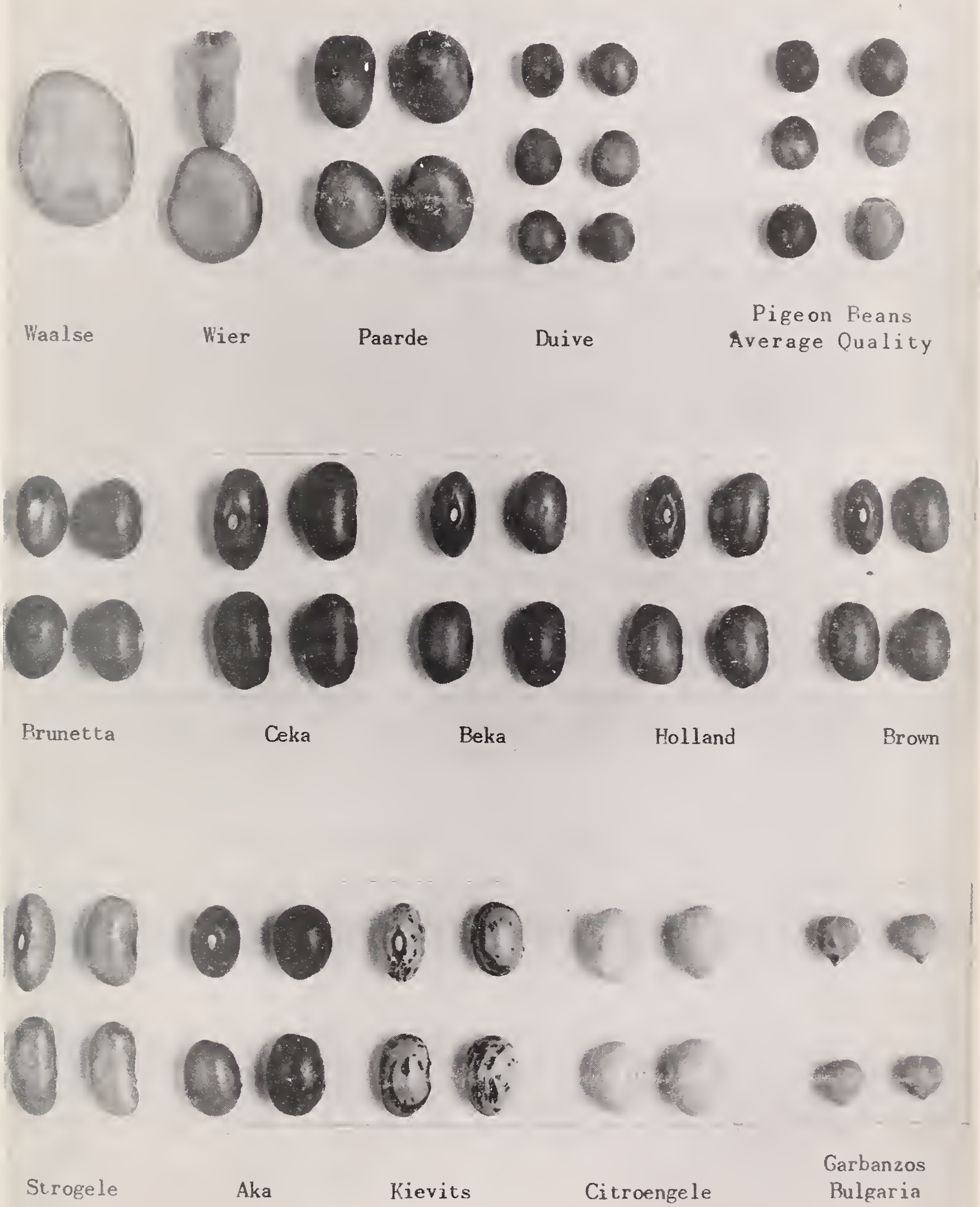


FIGURE 8

(Natural size)

NETHERLANDS: CLASSES OF PEAS PRODUCED OR IMPORTED

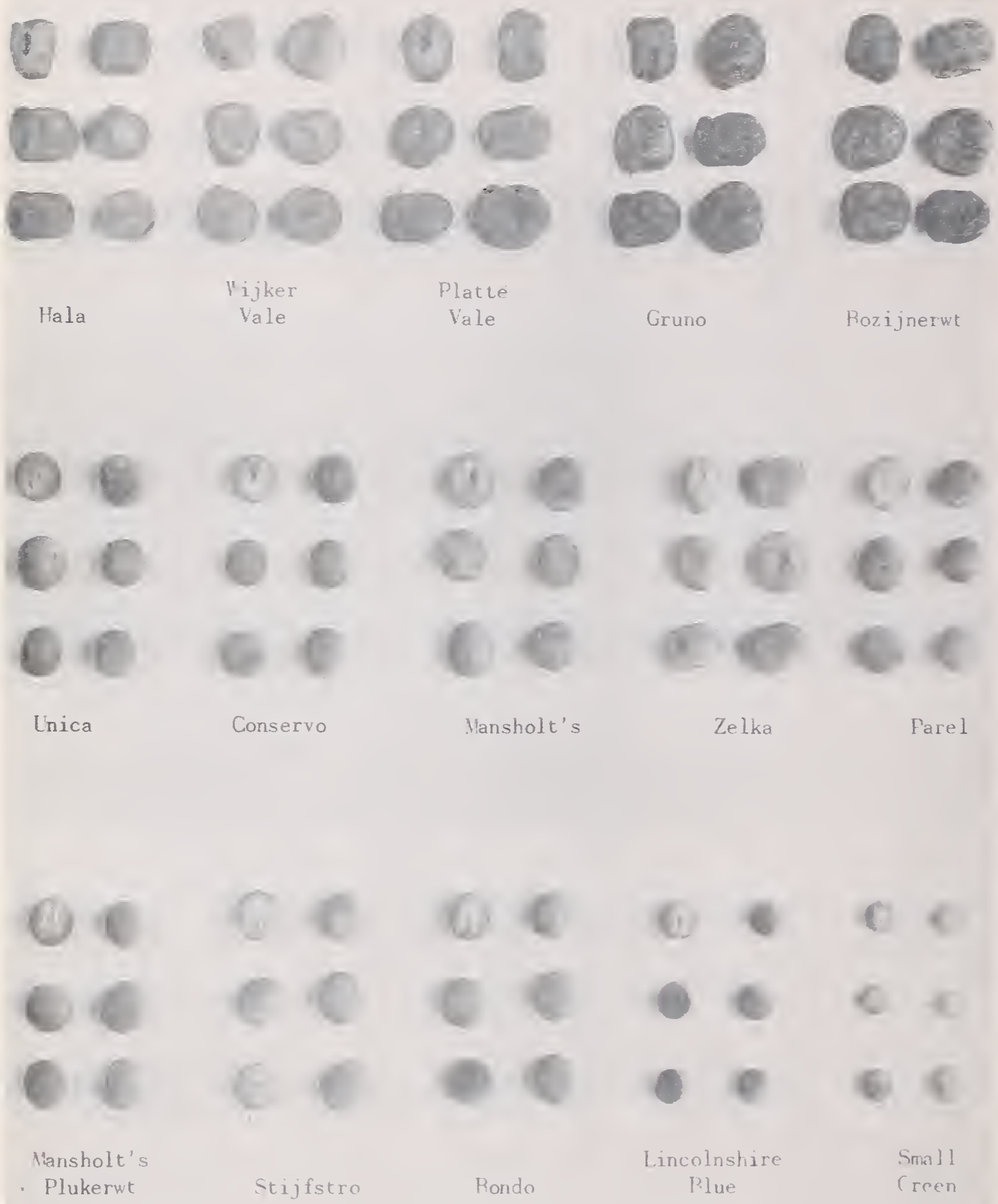


Figure 9.

(Natural size)

NETHERLANDS: CLASSES OF PEAS PRODUCED OR IMPORTED FOR MILLING OR FOR REEXPORT

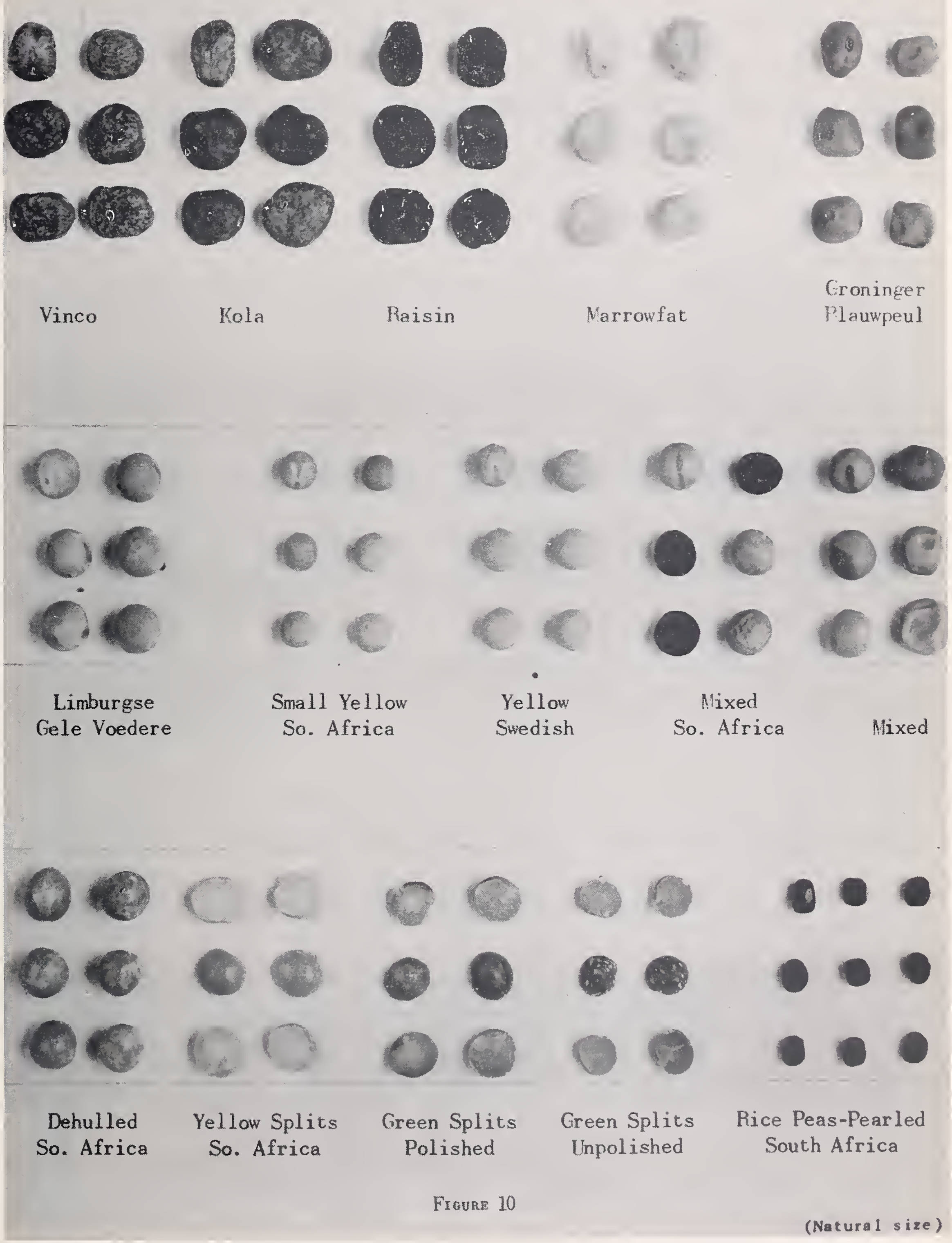
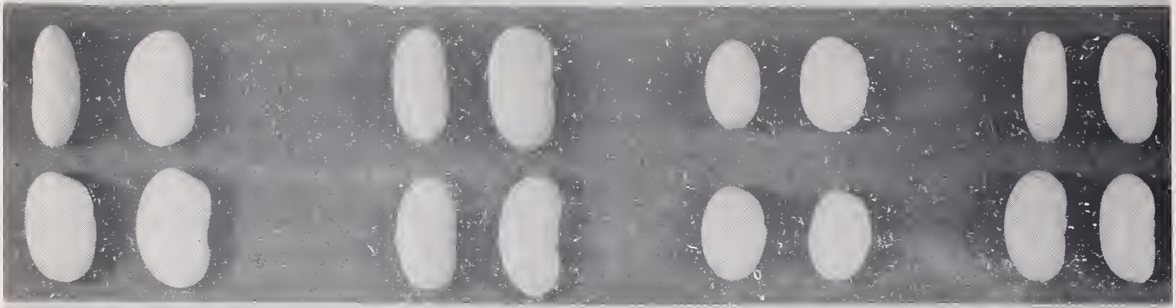


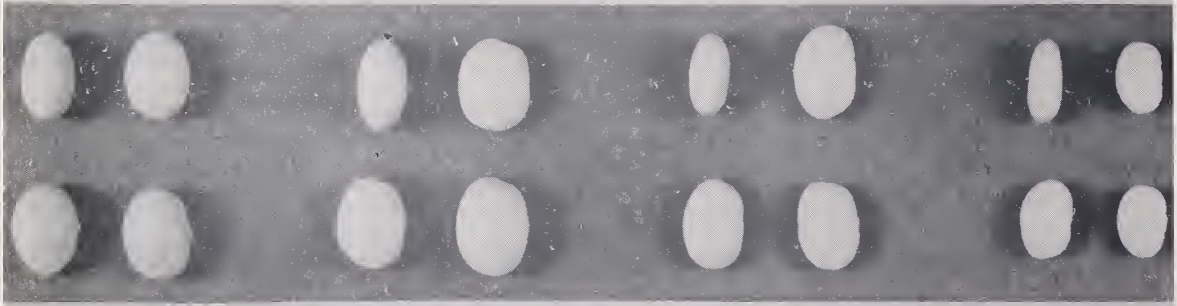
Figure 10

(Natural size)

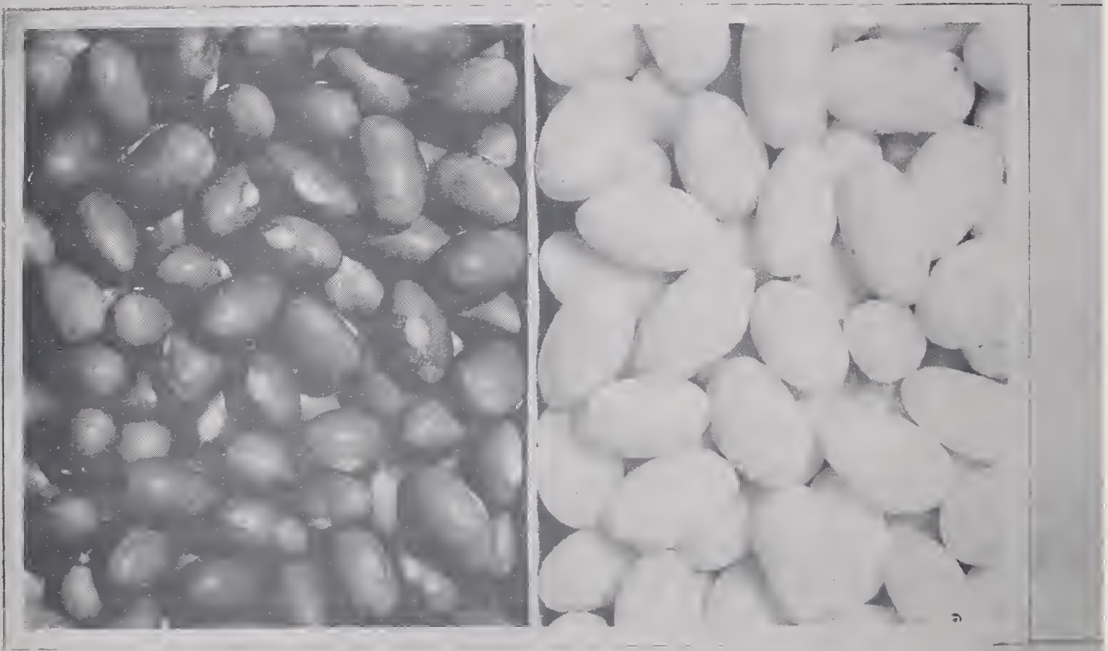
NETHERLANDS: CLASSES OF WHITE BEANS PRODUCED OR IMPORTED



Lingot (Africa) Krombek Medium Roundback



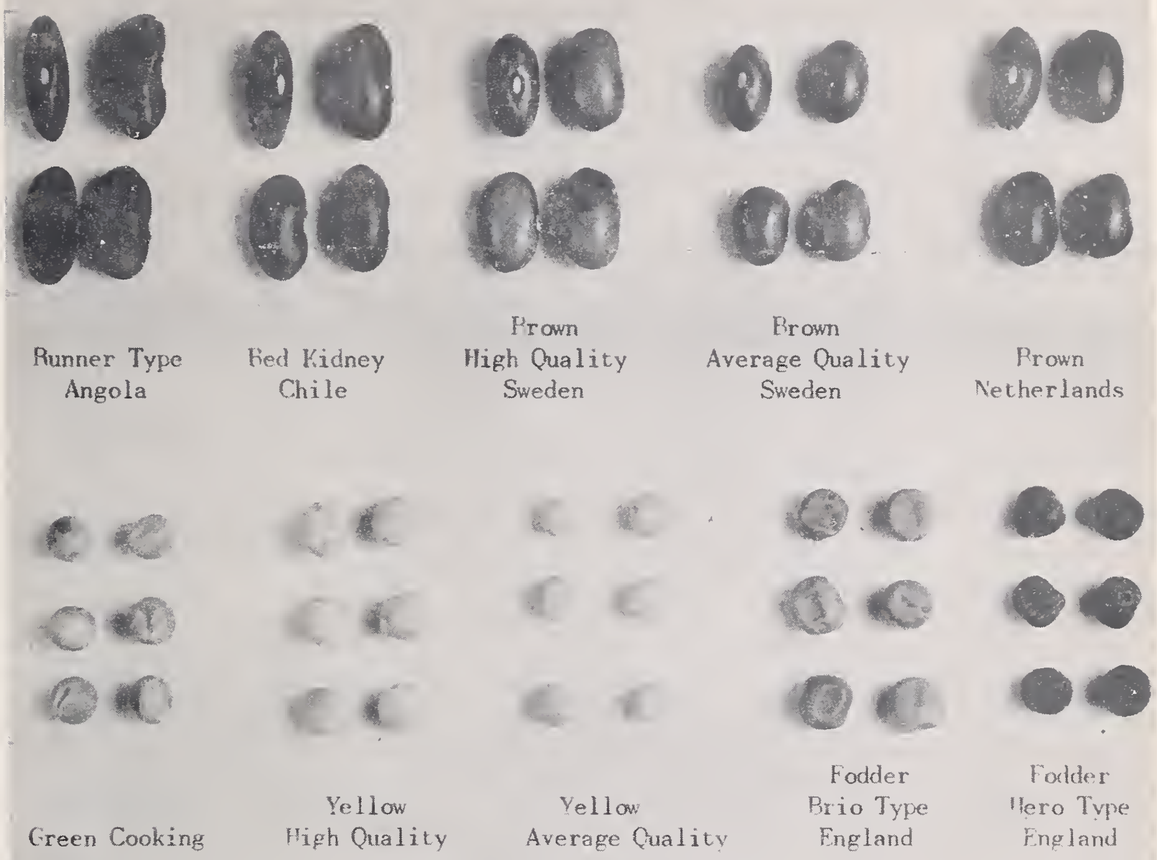
Excelsior Walcherse Slabeans Pearl Hungary



Brunetta is a new variety of Swedish brown beans having a very thin seed coat. It is said that the seed coat and brown pigment dissolve when cooked, resulting in a white bean with very little cellulose or fiber. The Brunetta is shown above, before and after cooking.

Figure 11

SWEDEN: CLASSES OF BEANS AND PEAS PRODUCED OR IMPORTED FOR LOCAL CONSUMPTION



NORWAY: CLASSES OF PEAS AND LENTILS IMPORTED

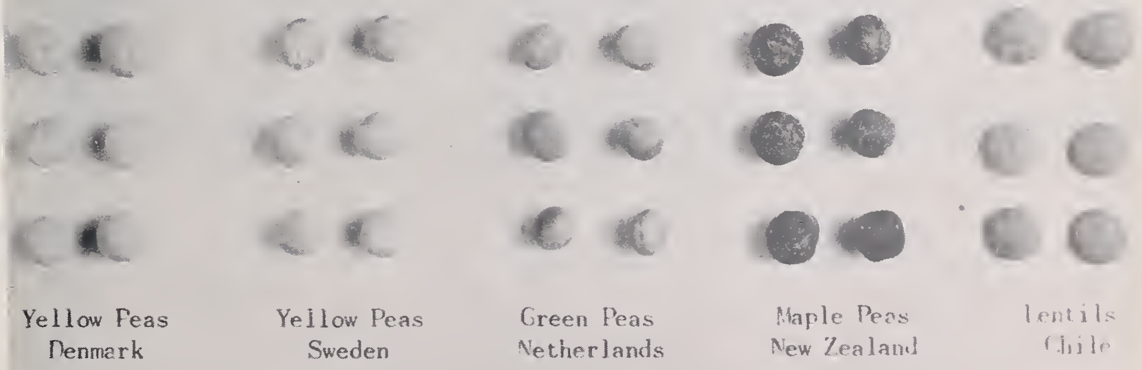


Figure 12 (Natural size)

DENMARK: CLASSES OF LUPINES, BEANS, LENTILS, AND PEAS GROWN OR IMPORTED FOR LOCAL CONSUMPTION

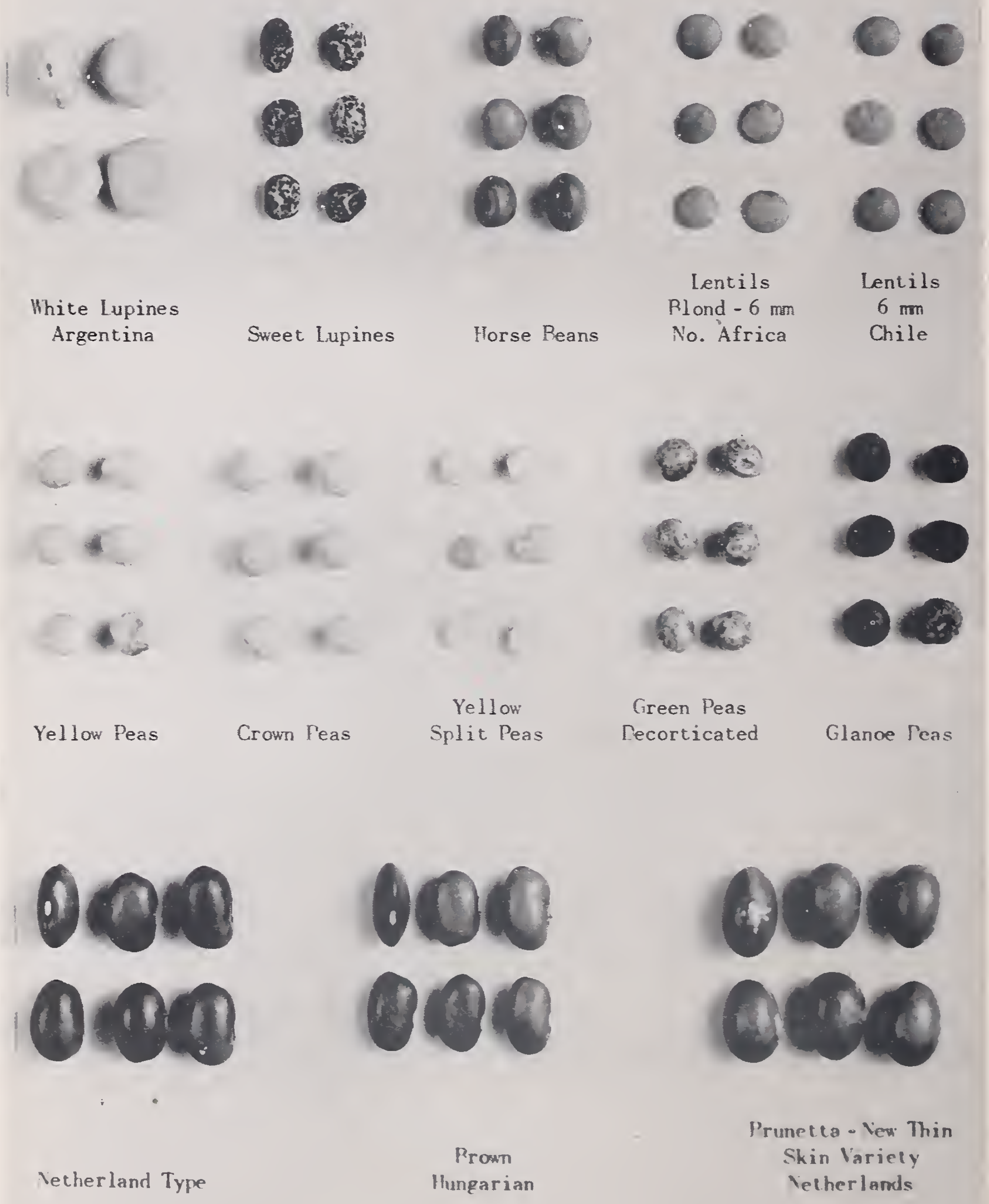


FIGURE 13

(Natural size)

TABLE 13.-*The Netherlands: Acreage of dry pulses grown in 1939 and 1946 to 1949*

PULSE	1939	1946	1947	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*
Beans:					
Broad	28.0	3.3	1.7	1.0	1.1
Pigeon		4.9	2.3	1.3	4.2
Horse		18.4	11.4	7.8	5.8
Field			1.9	1.0	1.0
Dry green peas:					
Smooth	81.0	64.2	57.7	48.5	38.8
Marrowfat	16.3	2.7	3.2	4.1	8.2
Dry colored peas:					
Capucyners	8.2	4.3	2.8	2.4	3.0
Dark Brown					
Dry beans:					
Brown	10.7	7.1	8.4	8.2	11.4
White	4.5	1.3	1.4	1.2	1.7
Total	148.7	106.2	90.8	77.3	77.4

---

[1] Preliminary.

TABLE 14.-*The Netherlands: Yield per acre and production of dry beans, peas and horse beans in 1935-39, 1940-44, 1948 and 1949*

PULSE	YIELD PER ACRE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	Pounds	*Pounds*	*Pounds*	*Pounds*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry peas	2,431	1,914	1,233	2,808	2,382	1,665	703	1,460
Dry beans	1,706	1,484	1,467	1,723	307	460	132	224
Broad and horse beans	2,329	1,630	1,555	2,267	652	326	171	272

---

[1] Preliminary.

and in the South there is a variety known as slabeans (similar to U. S. Great Northern). The Islands of Walcheron and Tholen were both white bean-producing areas which were flooded with salt water during the war. This accounts for the decrease in white bean acreage in recent years. The land flooded with salt water is being reclaimed and now a more tolerant crop such as barley can be grown to some extent, and within a few years dry beans will probably be grown in these areas again. The loss of the white bean acreage has probably accounted for some increase in brown bean production. The Dutch brown bean is of very high quality and compares favorably with any U. S. type. (See figure 8.)

Dry Peas

The Dutch blue peas and Dutch green peas are synonymous, with England preferring to use the term "blue peas". England took large quantities of both marrowfat (green wrinkled) and Dutch blue peas prior to 1940. In 1938 England imported over 21 million pounds of marrowfats and 44 million pounds of green peas from the Netherlands. Belgium and Luxembourg imported 3.7 million pounds of green split peas in 1938 which was more than all of the split pea exports in 1948. The Dutch pea is a very high quality product being slightly larger than Alaska, smoother seed coat, and deeper color. This pea is liked by the manufacturers of split peas because high quality split peas can be produced from it with much less waste than from U. S. Alaska or other smooth peas. This pea is also valuable for decorticating because of the tendency of the seed coat to come loose more easily than other types, resulting in less shrinkage.

Recent plant breeding has developed several varieties of Dutch green peas which have special characteristics. Stijfstroo (Stiffstraw) is a firm straw variety which is more erect and suitable for machinery harvest. Rondo is a variety suited to growing on heavy clay soils. It is a larger pea and somewhat lighter in green color. Parel (Pearl) is a variety with a very round seed of uniform type grown in poorer soils. (See figure 9.)

The green marrowfat pea (semiwrinkled) is of significance in the Netherlands. It was grown on more than 8,000 acres in 1949 compared with 4,000 in 1948 and only 2,700 acres in 1946. In addition to the green marrowfat (capucyner) peas, about 2,200 acres of brown marrowfat peas were grown in 1949.

Milling and Splitting

It has been a practice to import considerable quantities of cheap peas from Africa for cleaning, splitting, or decorticating. With six splitting plants operating in a small country like the Netherlands, the trade must depend on considerable re-export business. Most of the peas imported are yellow, and since very few yellow splits are consumed in the Netherlands there must be considerable re-export trade after splitting or polishing.

New Type of Dutch Brown Beans

Some of the cooperative associations of the Netherlands maintain their own plant breeding departments. New varieties of beans and peas are constantly under trial. One of the more promising new developments is the Brunetta bean which has a brown seed coat; when cooked the seed coat dissolves or disappears leaving a tender fiberless white bean. This variety is easily digested and may be recommended by dietitians. (See figure 11.)

Norway

The production of dry pulses in Norway is insignificant. There is very little open country available for the production of the crops. Practically no dry beans are grown and only around 2,000 acres are planted for dry peas annually. Rather high yields are produced on the land planted for peas. The prewar 1935-39 average yield was 1,713 pounds per acre, which is exceeded only by the Netherlands and Belgium. In 1949 the yield was reported at approximately 2,000 pounds compared with 2,808 pounds and 2,715 pounds for the Netherlands and Belgium respectively. Crops of 50,000 one-hundredweight bags in 1949 and 53,000 bags in 1948 are above prewar levels of 39,000 bags for the 1935-39 period.

Norway normally imported 5,500 to 6,000 metric tons of dry pulses annually prewar. Imports of beans, peas, and lentils (mostly peas) were 4,924, 4,507, and 6,054 metric tons for the years 1946, 1947, and 1948 respectively. Expected imports for the October 1949-September 1950 period are estimated by the trade at about 7,000 metric tons. Prewar peas were imported from the United States, Poland, Australia, New Zealand, Chile, and South Africa. During the last two years most of the peas have been obtained from Denmark. The Australian peas are liked very much in Norway when obtainable.

Green peas are used principally in stews and yellow peas are used in soup. There is no market for split peas. The people seem to prefer the whole yellow pea for soups in spite of the rather fibrous seed coat. About 50 percent of the peas used are green and about 50 percent are yellow.

Norway and Germany both wanted substantial quantities of the 1949 Denmark yellow pea crop and the price was bid up in October from about $5.50 per hundredweight to $6.50 c.i.f. Hamburg within a few days.

No beans were imported in 1948 due to high prices. Ninety-five percent of the beans used are brown Swedish and about 5 percent are white. (See figure 12.)

Norway operates several whaling expeditions and sizable quantities of beans and peas are required for ships' crews.

Denmark

Production of Dry Pulses

There is a very small acreage of dry beans in Denmark. A few of the Netherland brown beans are grown, but since 1939 there has been very little trade in beans. Before the war a few beans were imported from Poland and the Netherlands. It is not possible to import any beans at this time because of trade agreements, but since consumption requirements are so low, the people are willing to substitute other foods.

Yellow peas are the main pulse crop in Denmark. About 12,000 acres of peas are grown on irrigated land which produces up to 4,500 pounds per acre under favorable conditions. From the 1949 crop about 25,000 bags were exported to Germany, and smaller quantities were shipped to Norway and England. The requirement for consumption in Denmark is only about 50,000 bags annually. No green peas are produced; however, a few are imported from the Netherlands for food. The major part of the peas are consumed whole and most of these are decorticated. There is only one splitting and decorticating plant in Denmark. Samples of beans and peas grown or imported are indicated in figure 13.

Switzerland

Production

Swiss crops or pulses are insignificant and are consumed almost exclusively on the farms where they are produced. During the late war when demand for pulses was heavy, special prices were set up in order to encourage production. However, results were insignificant, and even in the best years deliveries made by farmers never surpassed 100 metric tons, and consisted mainly of beans and peas. Statistics of the Swiss Farmer's Union indicate 1946 acreage for beans at about 4,550 acres and 1947 at 3,780. Acreages for dry peas were 3,930 and 3,720 acres for 1946 and 1947 respectively. No lentils or garbanzos are produced in Switzerland.

Consumption

The production of pulses in Switzerland is so negligible that the country depends almost entirely on imports. Consumption of pulses practically equals imports. Exports of pulses have been from 1 to 10 percent of imports and have been confined to border trade with neighboring countries. One reason for low requirements of pulses is the availability of fresh fruits and vegetables well into the winter.

It is estimated that the requirements of the approximately 4.5 million people are around 3,000 metric tons of dry peas (1.5 pounds per capita) and about 2,400 tons of dry beans (1.2 pounds per capita). The peas required are about 90 percent yellow and about 10 percent green. The whole peas are obtained principally from Canada, the United States, and Denmark. Practically all of the peas used are whole; however, some are decorticated (shelled).

Dry beans are obtained from several sources. Abysinnia and Hungary are quite important sources of white beans, with other shipments originating from Chile, Turkey, Angola, and others. Colored beans are obtained from Italy and France of the saluggia (cranberry) type for use by the Italian population of Switzerland.

Imports of beans and peas for 1937 and for 1945 through 1948 are indicated in table 15.

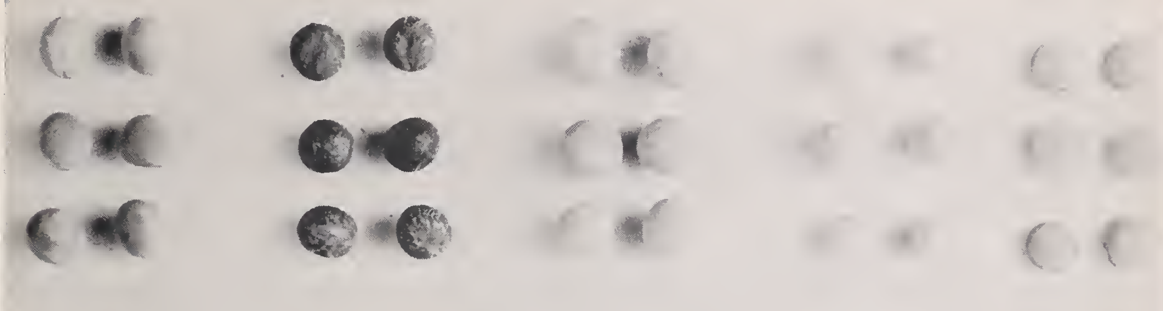
Milling and Splitting

Switzerland does not use split peas locally, although there are 3 splitting plants located in that country. These cleaning and splitting plants depend on intransit business. Basel, Switzerland, is on the Rhine River which connects this country with seagoing steamships. Peas can be shipped in from the Netherlands or Sweden, or from North America by water, for milling or for consumption. Peas from Tasmania and New Zealand are often imported for soil improvement purposes. No records are available on the amount of peas and beans transhipped. (See figure 14.)

Use of Horse Beans

The seed coats are removed from horse beans and the cotyledons are ground into flour. The flour is sweet and is mixed, up to 10 percent, with wheat flour for baking special breads. This requirement is not large but is significant.

SWITZERLAND: CLASSES OF PEAS, LENTILS AND BEANS GROWN OR IMPORTED



Peas Dutch Green Denmark

Maple Peas Tasmania

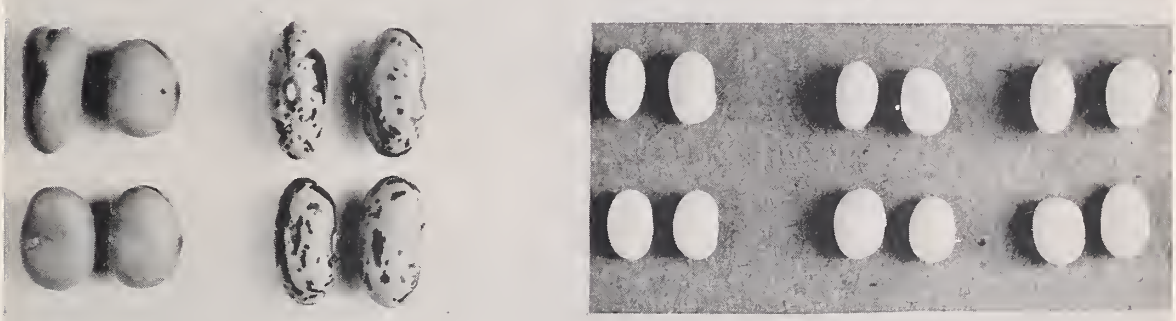
Peas Canada

Peas Yellow Denmark

Lentils 6 mm Chile

COLORED

WHITE



Horse Beans Germany

Cranberry Po. Valley

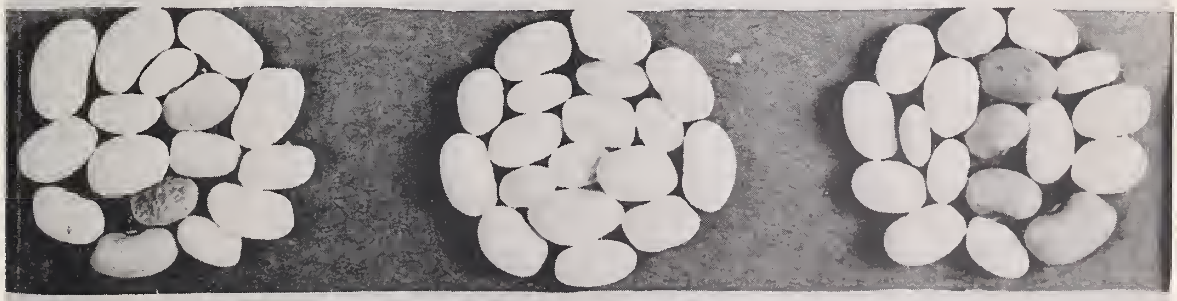
Pearl Hungary

Abysinnia

Chile

Figure 14

EXAMPLES OF RATHER UNUSUAL LOW QUALITY BEANS BEING IMPORTED FROM NORTH AFRICA AND MIDDLE EAST FOR MILLING AND FOR LOCAL USE OR REEXPORT



5% defects - Turkey

3% defects - Turkey

Mixed - Hungary

Figure 15

(Natural size)

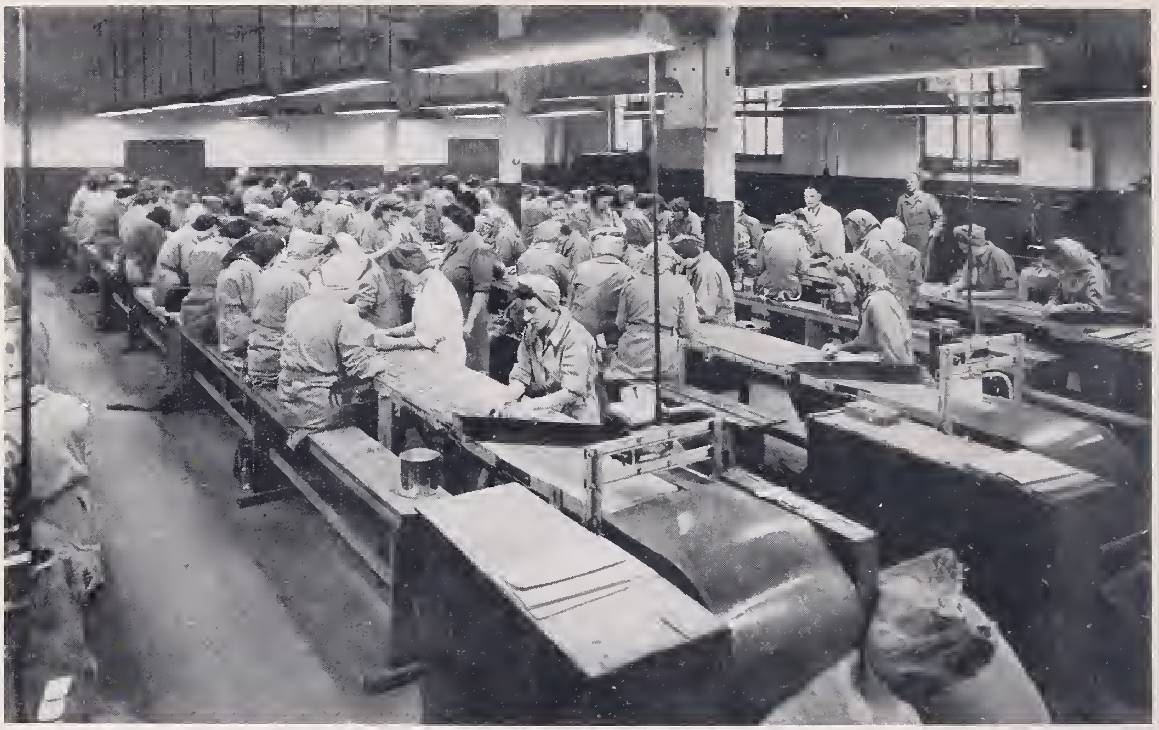


FIGURE 16.- An efficient handpicking room well lighted by fluorescent fixtures and equipped with continuous picking belts wide enough so that 10 girls may work on each side of each belt, removing defects as the peas move by.

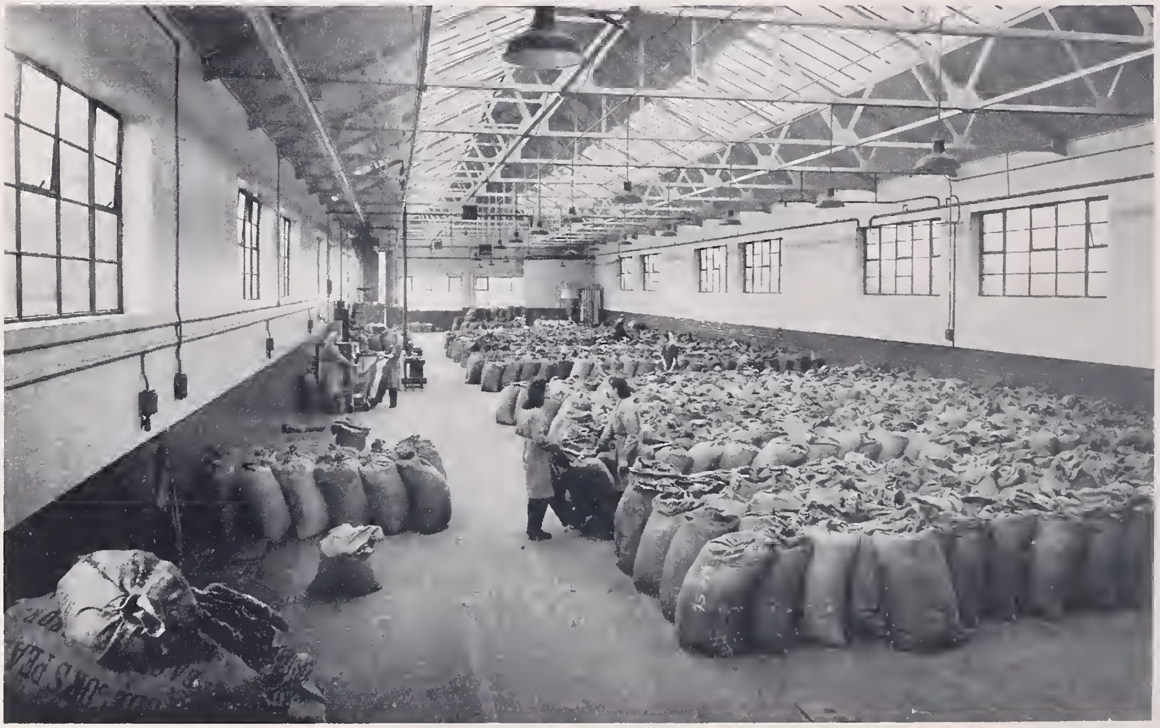


FIGURE 17.- A well-constructed storage room. Note that girls are operating the hand trucks.

BELGIUM: CLASSES OF WHITE BEANS GROWN OR IMPORTED

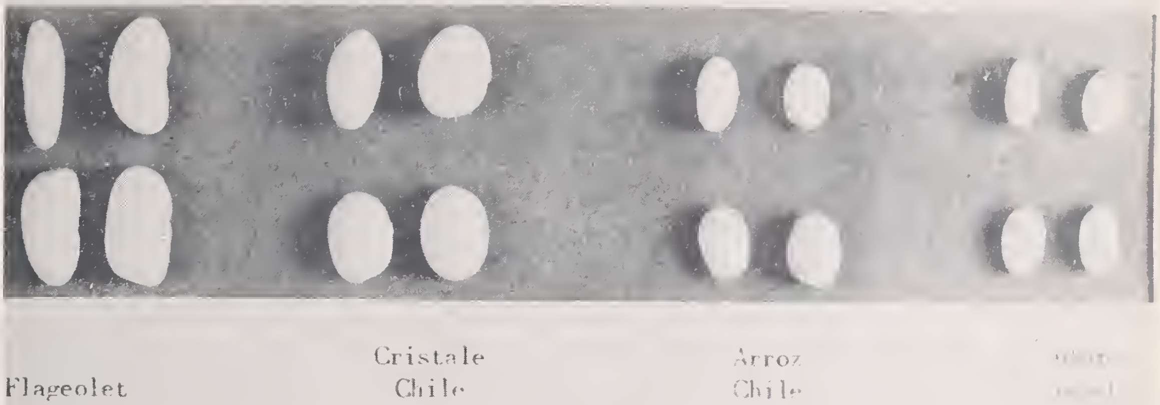


FIGURE 18

(Natural size)

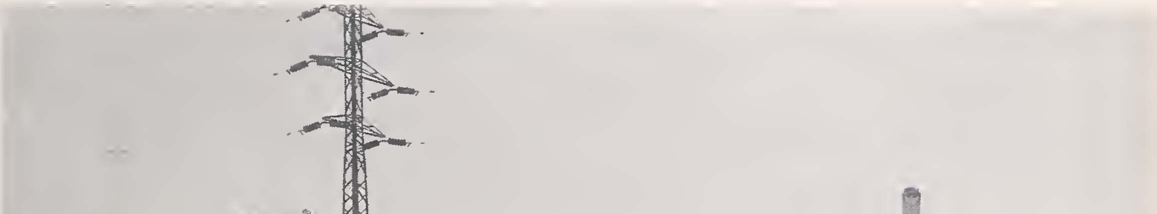
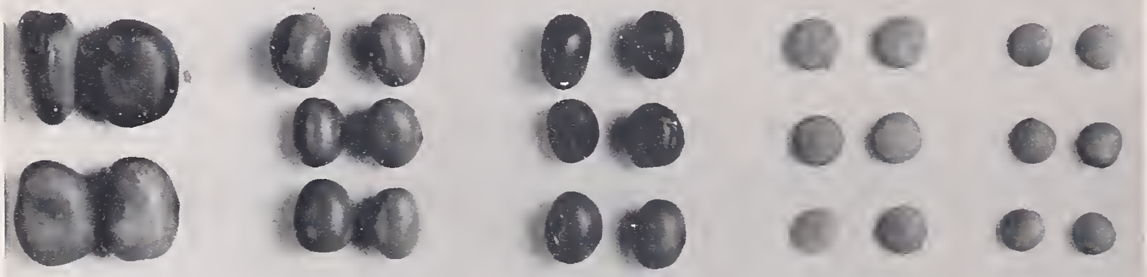


FIGURE 19.- This is an example of loading and unloading equipment used at Merxem, Belgium. This plant is located on both a railroad and a canal so that pulses can be handled both by water and by rail. In addition to the barge or boat unloading facilities, the plant has turntables for taking rail cars from the main switch into the plant for loading or unloading. Large quantities of pulses are cleaned, graded, split, decorticated, polished, and re-exported from this plant.

BELGIUM: CLASSES OF HORSE BEANS, LENTILS, PEAS AND GARBANZOS PRODUCED FOR LOCAL CONSUMPTION OR IMPORTED FOR CLEANING, MILLING, SPLITTING AND DECORTICATING FOR REEXPORT



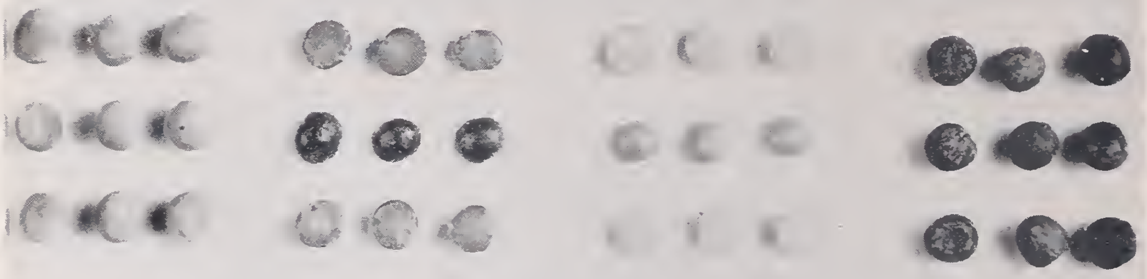
Horse Beans

Pigeon Beans

Pigeon Beans
New Zealand

Lentils
6 mm
Chile

Lentils
5 mm
Chile

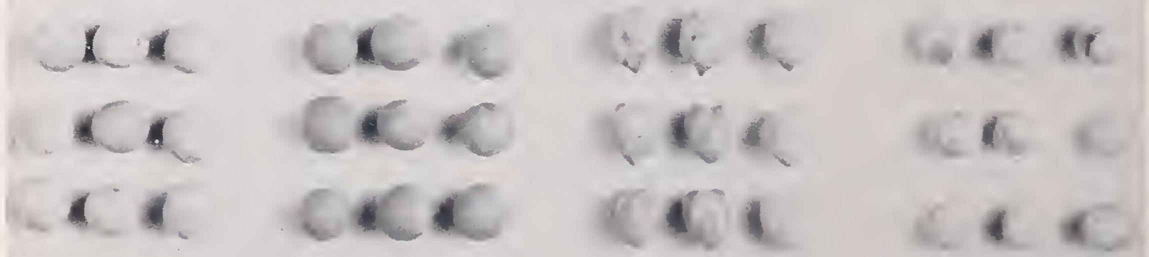


Green Peas

Green Split
Peas

Yellow Split
Peas
Belgian Congo

Maple Peas
Tasmania



Peas
Imported
Canada

Peas
After
Decorticating

Garbanzos
Imported
N. Africa

Garbanzos
After
Decorticating

Figure 20

(Natural size)

Canned Beans

It is estimated that about 50 percent of the dry beans consumed in Switzerland are canned either with or without tomato sauce, but seldom with pork. At least two canners are located in that country.

TABLE 15. *Switzerland: Imports of pulses*

COUNTRY OF ORIGIN	1937	1945	1941	1947	1948
			Bags of 100 pounds		
Dry Beans					
United States................	62	2,931	3,330	1,668	5,173
Abysinnia...................	-	-	-	15,523	14,718
Hungary.....................	34,984	220	8,175	9,457	12,285
British East Africa..........	-	-	-	2,391	7,924
Chile.......................	-	6,537	5,431	3,136	3,471
Turkey......................	-	-	-	42,526	-
Others......................	12,964	23,604	3,480	3,496	9,971
Total..................	48,040	33,289	20,416	78,197	53,592
			Bags of 100 pounds		
Peas					
United States................	-	7,606	26,441	19,516	13,475
Canada......................	-	-	-	25,707	28,101
Denmark.....................	-	-	-	-	19,267
Chile.......................	-	-	-	6,958	2,482
French Morocco..............	-	-	760	2,081	2,028
Hungary.....................	9,927	17,654	4,481	1,838	1,466
Netherlands.................	4,816	115	1,120	1,373	771
Others......................	[1] 67,244	[2] 52,757	[3] 108,893	13,636	3,064
Total..................	81,987	78,132	141,695	71,109	70,654

[1] Includes 35,800 bags from Poland.

[2] Includes 50,700 bags from Rumania.

[3] Includes 102,000 bags from Sweden.

Belgium

Production

Belgium is a net importer of dry beans, peas, and horse beans. Before the war large quantities of dry beans were imported, most of which were re-exported after sorting and milling. Since the war Belgium has lost much of this trade and re-exports are negligible.

The acreage and production of dry beans, peas, and broad beans may be seen in table 16.

TABLE 16.-*Belgium: Acreage and production of dry edible beans, peas, and broad beans, average 1935-39 and 1940-44 annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans	9	7	2	2	125	125	32	26
Dry peas	18	30	19	13	407	622	212	353
Horse beans	23	8	7	11	513	146	133	226

[1] Preliminary.

Belgian pulse crops yield very well. The 1949 yield of dry edible peas was reported at 2,715 pounds per acre, exceeded only by the Netherlands with a yield of 2,808. The horse bean yield of 2,055 pounds per acre was also surpassed by the Netherlands yield of 2,267 pounds per acre in 1949. The 1,481 pound yield of dry edible beans per acre in 1949 was also exceeded by the Netherlands yield of 1,723 pounds.

Imports

Before the war, considerable pulse trade was carried on in Belgium. Ports like Antwerp and Merxem have a long history in the pulse trade. Antwerp has a very excellent harbor and was an ideal location to bring in low-grade beans, peas, and lentils for recleaning, splitting, decorticating, and re-exporting to all of western Europe, and to some extent to the Western Hemisphere. (See figure 20.) One of the cleaning plants located in the Antwerp area is shown in figure 19. This mill is equipped with excellent loading and unloading equipment for shipments by rail or boat. Cars can be diverted from turntables in front of the plant to covered warehouse space for loading or unloading.

During the past few years imports of peas were mostly from France, the Netherlands, Australia, New Zealand, Chile, and the Belgian Congo. During 1948 and the first 6 months of 1949, dry beans were imported principally from China, Yugoslavia, Chile, and the Belgian Congo. Also, shipments of horse beans have been received from the United Kingdom, China, Australia, Ethiopia, and other areas. Imports by kind of pulse and country of origin may be seen in table 17.

TABLE 17.-*Belgium: Imports of beans, peas and horse beans 1948 and January-June 1949*

COUNTRY OF ORIGIN	NUMBER OF BAGS OF 100 POUNDS	
	1948	JANUARY-JUNE 1949
Dry Beans		
China	28,388	110
South Africa	9,169	1,763
Chile	14,700	-
Yugoslavia	-	4,672
Belgian Congo	7,538	-
Hungary	2,248	3,174
Other	13,665	15,957
Total	75,708	25,676
Dry Peas		
France	1,389	14,767
Netherlands	2,380	7,802
Turkey	7,119	-
Sweden	-	2,755
Belgian Congo	3,570	17,918
United States	8,728	485
Canada	4,893	10,976
Chile	35,396	4,518
Australia	10,006	37,688
New Zealand	16,552	9,345
Other	4,915	7,803
Total	94,948	114,057
Horse Beans		
United Kingdom	-	19,902
China	8,728	-
Ethiopia	2,182	-
Australia	-	3,284
Other	4,143	3,284
Total	15,053	26,470

Pre-World War I Trade

Dry edible beans, peas, and lentils of very high quality were imported from Russia, Poland, Yugoslavia, Hungary and Austria before World War I. A large share of these imports were intended for re-export. Russia produced an excellent quality, quick-cooking, non-fibrous lentil, but it was sold uncleaned and very full of chaff, foreign material, and small lentils. These were imported by Belgium, recleaned, and sold to France or other lentil consuming areas. In addition, white peas of very high quality and large size, quick cooking, and very desirable for shelling or decorticating were imported from the Soviet Union. The Soviet Union now has control of the better white pea-producing area of Germany, which further decreases the availability of high quality white peas for use in the western European countries, since practically no yellow peas are produced in Belgium. (See figures 18 and 20.)

Before the war, dry edible beans of excellent quality from the Danube basin, principally of the white pearl type, were imported by the Antwerp firms for sorting and cleaning for local use and re-export. The Antwerp firms invested large sums of money in high class cleaning, splitting, and shelling machinery as well as costly loading and unloading equipment for handling water and/or railroad shipments.

It is significant that no fewer than 6 split-pea manufacturers are operating in Belgium (a country of 8,600,000 people), compared with about 12 splitters in the United States. This is because the major prewar cleaning and splitting were for re-export. The Belgian market represents a good cross-section of world prices of beans and peas as Belgian exporters are very alert for foreign trade and import beans, peas, rice, and lentils from all parts of the world for recleaning, milling, and re-export.

Pigeon Beans and Peas

Belgium is the best market in the world for pigeon beans and pigeon peas. Large quantities of very high quality small horse beans and maple peas are utilized for feeding special pigeons. The producers of high priced breeding and racing-type pigeons are more particular about feed for the birds than food for their own tables. Practically all of the maple peas imported from Australia, New Zealand, and Tasmania are for pigeon feed. A considerable quantity of the better quality Netherland pigeon beans (a small variety of horse bean) is imported by Belgium. (See figure 20.)

A blue green pea similar to the Netherlands type is produced in Belgium. About 25 percent of the green peas are consumed as whole peas and about 95 percent of all peas used in Belgium for food are green. Many Belgian dealers claim these green peas are more nearly free from bleach or yellow discoloration than the Holland type. This is a very important characteristic when the peas are used for splitting and decorticating.

Retail Prices of Beans, Peas, and Lentils

Prices quoted by the head of a large chain of retail stores operating over 2,000 stores in Belgium are as follows:

Commodity	*October 15, 1949 Price Per Pound*
Split peas	8.5¢ to 9.0 per lb.
Whole peas	7.3¢ per lb.
Lentils	9.0¢ per lb.
White beans	10.5¢ per lb.
Flageolet (yellow)	16.0¢ per lb.

These prices are bulk of about a low U. S. No. 2 quality. The flageolet bean is preferred and brings a premium. These beans were from Yugoslavia.

Belgian Congo

Exports of dry beans from the Belgian Congo for the period 1934 through 1935 were taken largely by Rhodesia with smaller amounts going to French Equatorial Africa and South Africa, and a few small shipments to Belgium.

FRANCE: CLASSES OF WHITE AND COLORED BEANS GROWN OR IMPORTED FOR LOCAL CONSUMPTION

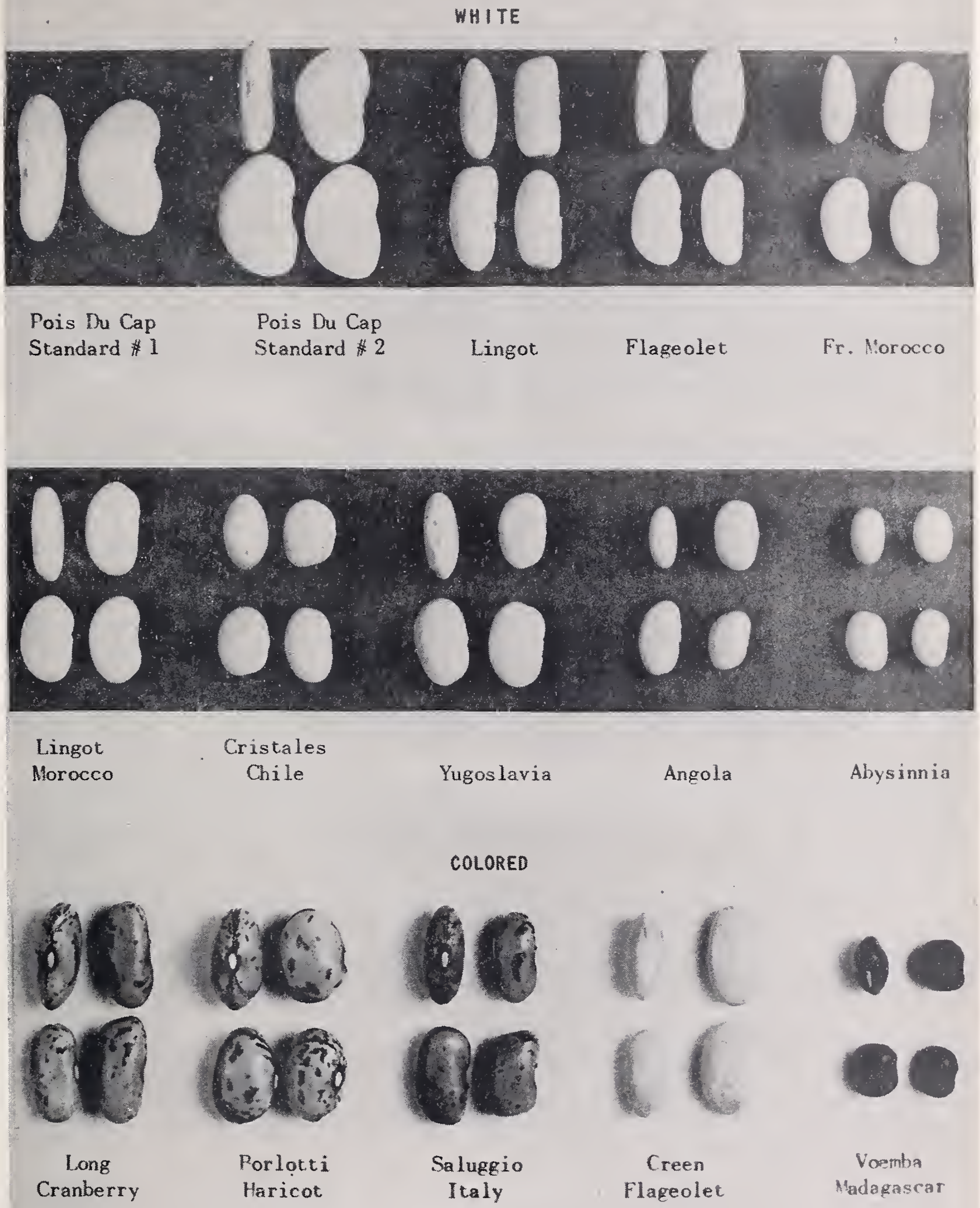


Figure 21

(Natural size)

FRANCE: CLASSES OF LENTILS AND PEAS GROWN OR IMPORTED

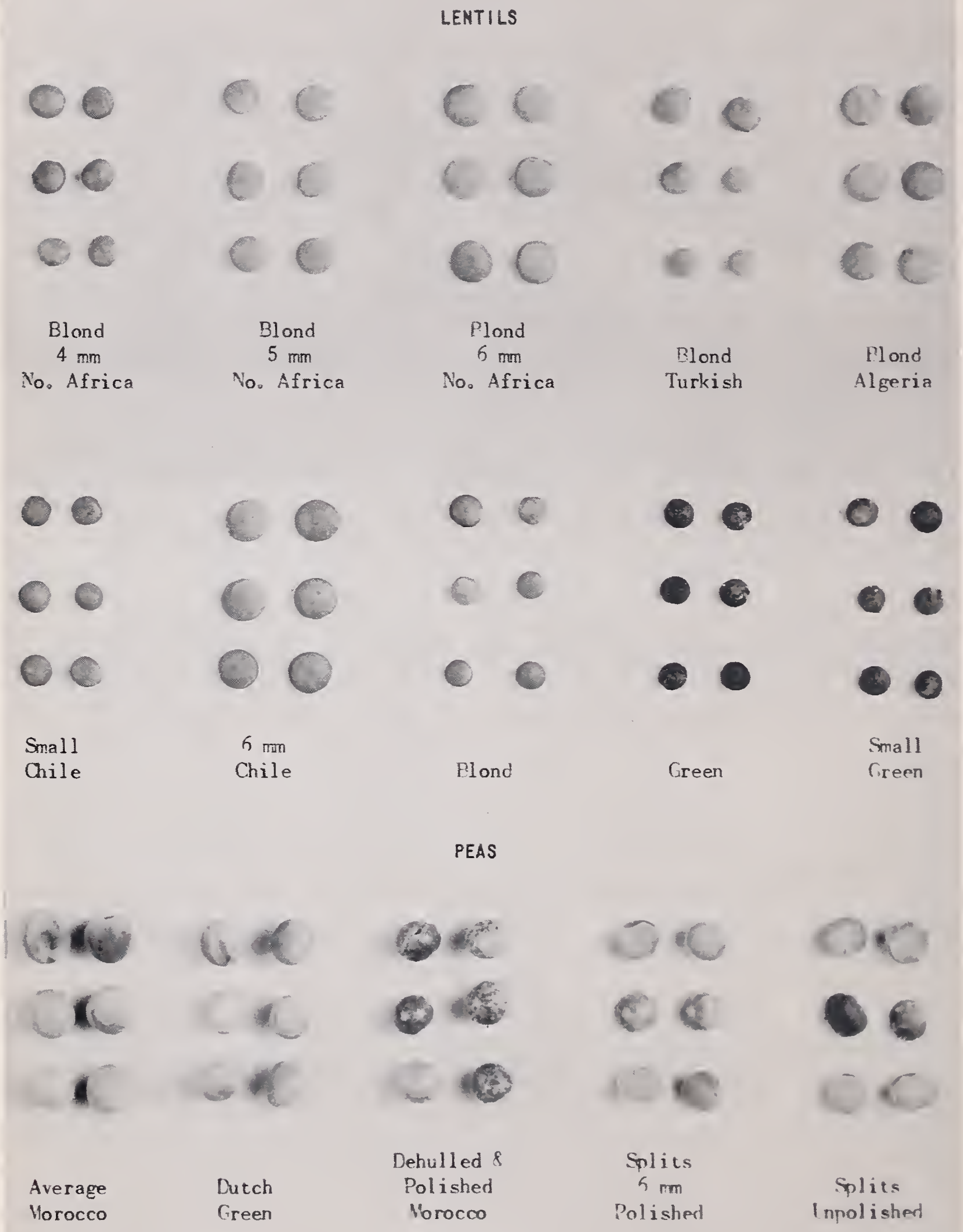


Figure 22

(Natural size)

In the above period shipments were not important compared with exports of 4,944,000 bags of 100 pounds for 1946, some 4,694,000 in 1947, nearly 3,000,000 bags in 1948, and about 5,650,000 bags for the first 9 months of 1949. (See table 18.)

TABLE 18.-*Belgian Congo: Dry bean exports*

COUNTRY OF DESTINATION	1946	1947	1948	9 MONTHS 1949
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*
Belgium........................	84	2,083	2,130	-
Rhodesia.......................	845	1,665	739	5,613
Tanganyika.....................	1,394	870	-	-
Other..........................	[1]2,621	75	105	36
Total......................	4,944	4,694	2,974	5,649

[1] Includes 2,575,000 bags to South Africa.

The beans received were of very low quality and a large part of them were used for feed because of insect and disease damage.

France

There were short crops of both dry edible beans and lentils in 1949 in France. Only a few more than 1 million bags of beans were produced, compared with 2,365,000 bags in 1948, and a prewar average of more than 3 million bags. Only 198,000 bags of lentils were produced in 1949, compared with 379,000 bags in 1948. The production of 900,000 bags of dry peas was comparable to 1948 production.

Acreage and production of dry pulses in France may be compared in table 19.

TABLE 19.-*France: Acreage and production of dry pulses, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949	1935-39	1940-44	1948	1949
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans................	424	395	371	348	3,069	2,092	2,365	1,080
Lentils..................	24	25	62	44	207	137	379	198
Dry peas.................	50	50	75	67	705	727	906	904
Broad and horse beans....	[2]147	80	97	104	1,714	685	924	816

[1] Preliminary.
[2] A very large part of the broad bean crop is normally picked green and used as a green vegetable for food.

When it became apparent in July that the 1949 production of dry pulses in France would be very small, the demand by dealers became extremely active. As a result, wholesale prices for haricot beans (principally white types) rose from 52 to 94 franc per kilo in August. (See figure 21.) Substantial imports were made. However, it is not expected that the decline of 1.3 million bags (below the 1948 crop) will be fully offset by dry bean imports. In addition to the 2.3 million bag production in 1948 nearly 400,000 bags of beans were imported principally from Hungary, Turkey, South Africa, Chile, and Madagascar.

French Zone of Morocco

France has depended substantially on French Morocco for supplemental stocks of dry pulses. (See figure 22.) Acreage and production of dry beans have increased substantially. Prewar (1935-39) acreage of 2,000 was increased to 15,000 in 1949, increasing production from 6,000 to 100,000 bags during this period. The production of dry peas has also increased from a production of 421,000 bags in 1935-39 to 1 million bags in 1949. The production of lentils and garbanzos is also up over prewar, except that a very short crop of garbanzos was harvested in 1949. The increase in acreage and production of dry pulses in French Morocco may be noticed in table 20.

There has been an important shift in the production of lentils in Algeria, as indicated by a 325 percent acreage increase over the average of 1940-44. The production was increased from 25,000 bags in the 1935-39 period to 423,000 bags in 1949. This crop compared with 257,000 bags in 1948. Western Europe has imported substantial quantities from this production. The acreage and production of dry pulses in Algeria are indicated in table 21.

Table 20.-*French Morocco: Acreage and production of dry edible pulses, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans	2	9	15	15	6	27	104	100
Lentils	34	39	28	25	92	107	105	100
Peas	79	123	170	170	421	638	1,005	1,000
Garbanzos	107	180	105	55	380	783	556	360
Broad and horse beans[2]	150	194	84	90	548	842	355	256

[1] Preliminary.

[2] Imported by France mostly for feed.

TABLE 21.-*Algeria: Acreage and production of dry edible pulses, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans.............	75	68	46	50	356	204	204	225
Lentils................	6	24	41	80	25	71	257	423
Peas..................	18	35	23	23	98	102	106	104
Garbanzos.............	36	57	44	43	162	121	182	201
Horse beans...........	75	68	46	50	356	204	204	225

[1] Preliminary.

Cleaning of Lentils

Lentil cleaning and sizing is a very important part of the milling of this commodity. Since the lentils vary widely in size when received at the plant it is necessary to run the commodity over perforated screens with holes varying in size from 2 to 8 millimeters. The small green lentils are used throughout France. The large lentils go to special trade. (See figure 22.)

Uniformity of size seems to be important from both appearance and time of cooking. The French lentils are very small, being from 2 millimeters to 4 millimeters and are both green and tan in color. The French types are supplemented by other lentils from Algeria, Morocco, Chile, Argentina, Syria, and Turkey. It is reported that the consumption of lentils in Paris is greater than that of any other dry pulse. In 1935 and 1936 far more lentils were obtained from the Soviet Union than from any other source. In 1935 there were 241,000 bags of 100 pounds imported.

A very fine dust and inert material are usually present in the lentils when they are received at the mill. In order to remove this foreign material it is necessary to use a fine sawdust to polish the lentils. When stones and adobe are present, the lentils are put through a flotation (water solution) method to remove the heavy particles.

Weevil Control

Since many of the lentil and other dry edible pulse imports may be full of weevils or other insects, some fumigation facilities are essential. A number of mills are equipped with separate fumigation chambers where about one carload can be handled each 24 hours if necessary. Methyl bromide gas is being used generally for these fumigations. The methods of application of the fumigant and aeration of chambers are excellent.

Handpicking

In France handpicking of dry beans is quite important. Many of the cleaning plants are equipped with rather elaborate handpicking facilities for removing damage, foreign material, and other classes. A well-arranged picking room is illustrated in figure 16. In some plants the work of each handpicker (usually women) can be checked for output and efficiency at any time. See also figure 20 illustrating good storage.

Dry Bean Consumption and Requirements

About 90 percent of all beans used in France are white types, grown in France and imported for consumption. Examples are indicated in figure 21. Colored beans of the cranberry type also are indicated in figure 21. The cranberry type bean is used in the south of France by the Italian and other foreign people. It was apparent that fewer dry beans were being used in France than normal. It was pointed out that since bread had been removed from rationing more bread and fewer beans were being consumed. A very late fall and open winter with only light frosts resulted in a steady market of fresh vegetables at reasonable prices, making the use of dry beans more optional than compulsory. The reaction also seems to prevail that people ate so many beans during the food scarcities that fewer dry beans per capita are now required.

South France imports considerable cannellini (white kidney type) beans from Italy. From the Pyrenees Valley a large flat haricot bean is obtained. Some saluggia (long cranberry) are imported from the Pyrenees Valley of Italy.

Special Beans

The green flageolet beans grown in central and northeastern France are a very special type bean and make up about 5 percent of production. (See figure 21.) It takes much hand labor to assure the harvest of nice, uniform, green-colored beans. This color will break down in strong sun or artificial light, just as will the color of green peas, and the beans have to be carefully handled. The price is usually double the cost of white beans. However, it is a specialty bean much like U. S. dry green colored thorogreen baby limas which many people prefer and will pay a price differential to get. The green flageolet is said to hold its shape regardless of how long it is cooked.

Dry Pea Production

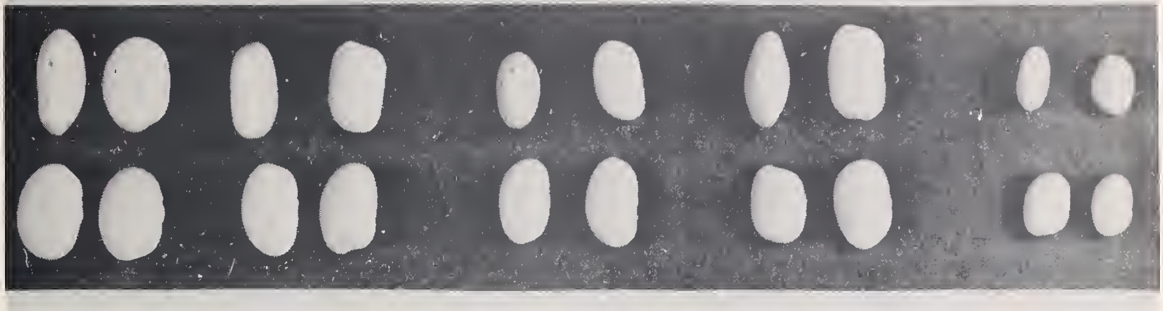
The production of peas in France is in the Northeast. These peas are the same type as the Netherland peas, but look much different in size and color. Seventy-five percent of the green peas used are splits; twenty-five percent are used whole, principally in the South. Probably there are not over 500 tons of yellow peas eaten in France annually.

Feed Beans

The voemba beans are imported from Madagascar. (See figure 21.) They are usually of very low quality and used only for feed. Some broad and horse beans are also grown in France for feed purposes. However, it is reported that considerable of the broad beans are harvested green and used for food.

GERMANY: CLASSES OF BEANS AND OTHER PULSES PRODUCED OR IMPORTED

WHITE BEANS



Cristales Chile

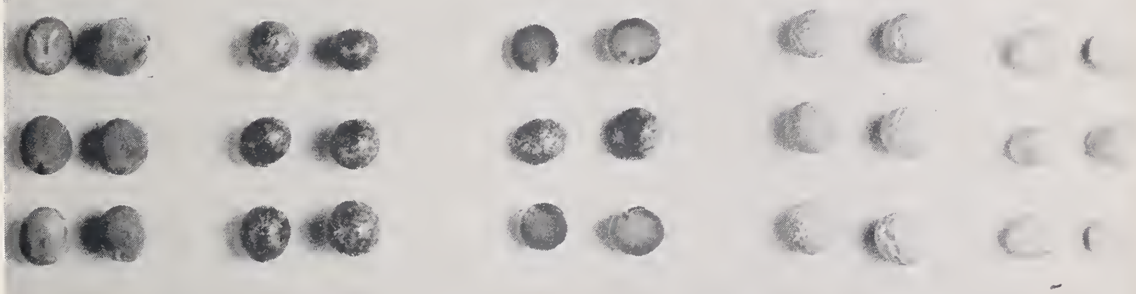
Turkey

Abysinnia

Iskenderum

Angola

PEAS



Germany

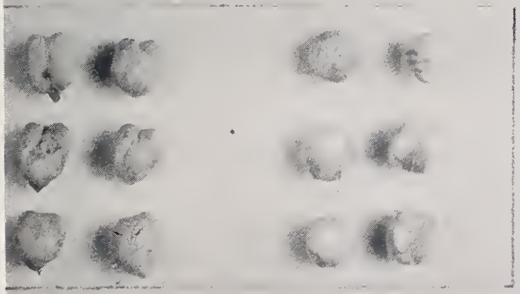
Dehulled & Polished Holland

Splits Polished with Talc Fr. Morocco

White Crown Denmark

Splits Polished

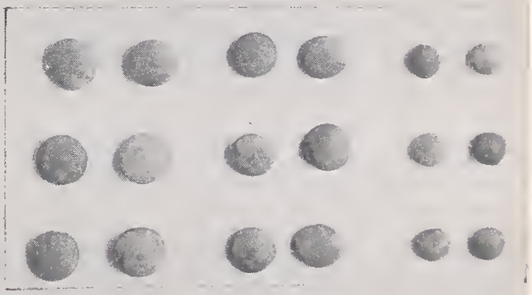
GARBANZOS



Before Polishing Fr. Morocco

Decorticated Fr. Morocco

LENTILS



Blond 6 mm Fr. Morocco

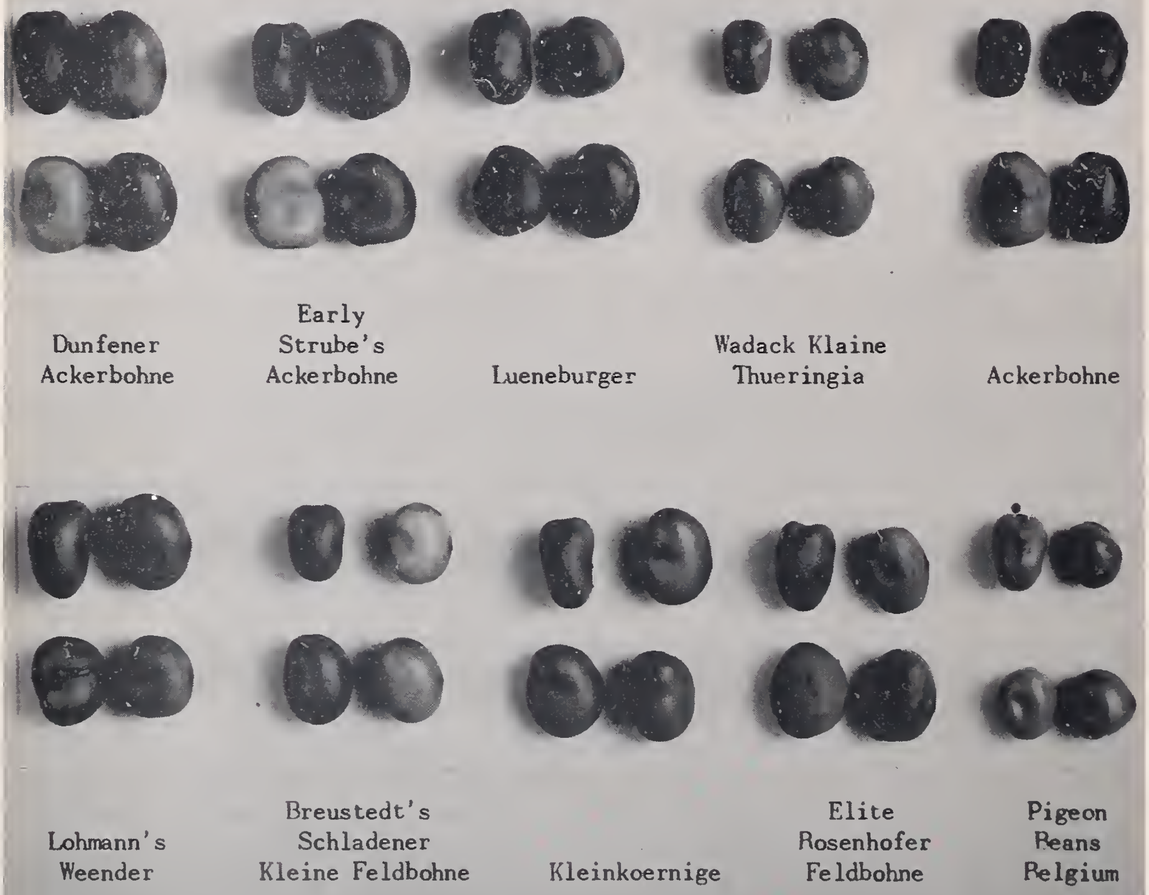
Blond 5 mm Algeria

Blond Turkey

Figure 23

(Natural size)

GERMANY: CLASSES OF HORSE BEANS AND COLORED BEANS PRODUCED OR IMPORTED



Dunfener Ackerbohne

Early Strube's Ackerbohne

Lueneburger

Wadack Klaine Thueringia

Ackerbohne

Lohmann's Weender

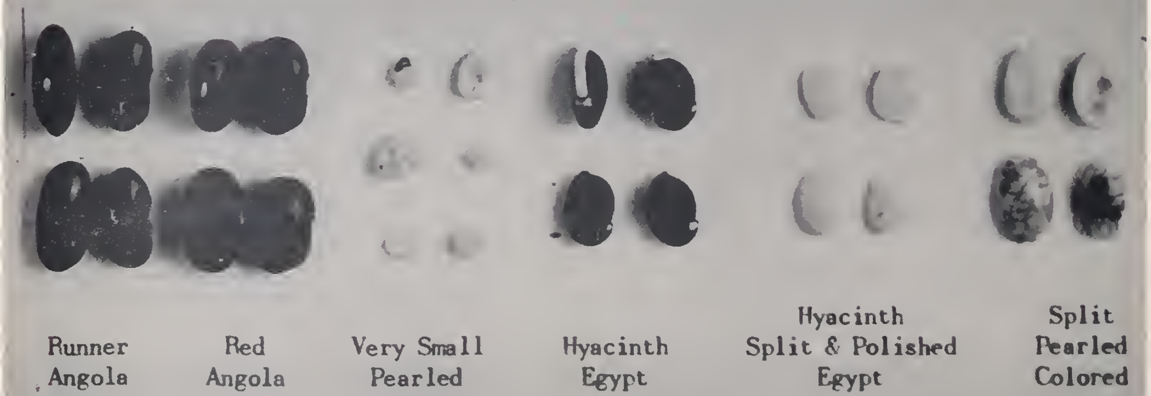
Breustedt's Schladener Kleine Feldbohne

Kleinkoernige

Elite Rosenhofer Feldbohne

Pigeon Beans Belgium

COLORED



Runner Angola

Red Angola

Very Small Pearled

Hyacinth Egypt

Hyacinth Split & Polished Egypt

Split Pearled Colored

Figure 24

(Natural size)

Germany

Dry Pea Production

The land and climate of Germany are somewhat more suited for the production of dry peas than for growing beans or lentils. A very important producing area is located in the Soviet Zone where 1,500,000 bags of large, high quality, dry yellow peas (like U. S. marrowfat) were produced in both 1948 and 1949. More peas are now produced in the Soviet Zone of Germany than in the Netherlands where 1,460,000 bags were produced in 1949 and only 703,000 bags in 1948. The loss of this German producing area has resulted in a shortage of yellow peas for all of Western Europe. The Victoria peas produced in the area are especially suited to the milling and dehulling process used in much of Western Europe. Apparently the white peas from the United States and Chile are not so well suited for decorticating because the cotyledons are broken apart in the process, resulting in a high percentage of split peas and waste. (See table 22.)

In Western Germany dry pea acreage has increased considerably since prewar; the 1935-39 average was only 33,000 compared with 86,000 acres in 1948 and 75,000 acres in 1949. A large part of the peas produced in Western Germany are the Netherland green or blue peas which are not of equal quality to the Netherlands-produced peas of the same variety. (See figure 23.)

Germany on Import Basis

Prewar Germany normally imported large quantities of beans and peas from nearby countries. In 1934 Germany imported 1,162,000 bags of pulses (mostly dry peas) from The Soviet Union. Some of the highest quality lentils are also produced in the Soviet Union and are not now available to Western Europe. During the same prewar year 418,000 bags of pulses were imported from Rumania and 300,000 bags from Hungary (mostly dry beans). About 150,000 bags of dry peas were obtained from the Netherlands, 135,000 bags from Sweden, and more than 1,000,000 bags of pulses from other sources. This made a total import requirement of more than 3.3 million bags of dry pulses in 1934. In recent years the Bizonal imports have been substantially reduced because of government import controls. In 1947 about 1.9 million bags and in 1948 about 2.1 million bags of edible pulses were imported for food. Import figures for 1949 are not yet available, but probably will not exceed 2.0 million bags.

TABLE 22.-*Western Germany: Acreage and production of dry beans and peas average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL[1]	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans..............	5	5	14	13	73	71	170	180
Peas...................	33	43	86	75	507	675	961	985
Total............	38	48	100	88	580	746	1,131	1,165

[1] Preliminary.

Dry Edible Bean Production

The acreage of dry beans was increased in Western Germany from around 5,000 acres for the 1935-44 period to 14,000 in 1948 and 13,000 in 1949. Although production in 1949 was only 180,000 bags, this was 3 times as great as dry bean production in the Soviet Zone of Germany. A few classes of beans imported for use in Germany may be seen in figure 23.

Field Beans

The field bean is of special significance in Germany as a source of highly digestible vegetable protein for human consumption and the feeding of livestock. Plant proteins have been very scarce for both human consumption and for animal feeding. Based on experimental trials, the field bean (horse bean) has been found of great value as livestock feed. Even the waste has a high nutritive value and it is reported that the leaf chaff is a better milk-producing fodder than wheat bran.

Beans used for human consumption are picked in the green state. It is not known how many are utilized for food but probably not a large percentage. Varieties of these beans grown in Germany may be seen in figure 24.

Lentils and Garbanzos

Since practically no lentils or garbanzos are grown in Germany, it is necessary to import substantial quantities to meet requirements. It was impossible to obtain enough yellow peas so considerable quantities of medium-sized garbanzos were ground down with large carborundum wheels and polished with talc to resemble yellow peas.

Screening and Splitting

Peas are first thoroughly screened to remove admixtures of earth, stone, parts of pods, stems, and other foreign material together with small pulses. It is necessary to grade the commodity to uniform sizes by flowing it over different sized screens since it is essential to use uniform-sized peas for splitting. The splitting equipment has to be carefully adjusted for the size of peas to be split. The machinery consists of revolving stones or emery wheels which, through friction against the peas, decorticates them. After the seedcoats have been removed the peas are then ready to be polished and used whole, or where split peas are required the process is carried one step further. With the seedcoat removed, the process of splitting is not difficult since usually a little pressure is all that is required to separate the two cotyledons. This is accomplished by running the peas between adjusted rolls usually with one rotating slightly faster to create a tearing effect.

After the splitting has been completed the miller proceeds to screen out all the pieces of chips and broken particles which are often ground for pea soup flower. The appearance of split peas is of paramount importance, and it is the aim of the miller to make his finished product as attractive as possible, so the splits are again sized into No. 1 and No. 2 quality for uniformity.

Polishing

To improve the appearance of both decorticated peas and split-peas most European merchants prefer to have this product polished. This is a contrast to the marketing of peas in the United States where decorticating and polishing are not practiced.

The procedure for polishing is about as follows: The decorticated peas or split peas are fed into a hot steam chamber which moistens, sterilizes, and partially cooks the splits. This steam process is said to shorten the time of cooking required in the home kitchen. While the peas are in a warm condition the pulses are fed into a large revolving wooden drum and are continually turned over and over inside the container. Friction against the sides and other splits polishes the peas and improves the appearance. Talc powder is often added to the peas to hasten the polishing. After the peas are removed from the polishing drum, it is necessary to cool the product before bagging and storing.

Peas, lentils, and other pulses are subject to fly and weevil infestation and peas which are bored are not very practical for splitting. Peas are inclined to break at the burrows, resulting in considerable waste. Deweeviling machines are now used for removing bored peas. Storing of polished peas for long periods is not considered good technique as these peas are more susceptible to maggot and mite infestation.

Colored Beans

Some colored beans not suitable or preferred by the German people are decorticated or pearled to make a product salable or acceptable to the trade. The red hyacinth beans have been imported from Egypt, processed into yellow splits, and distributed free of rationing control. Also other types of milled beans are shown in figure 24.

Various shipments of pulses were being procured in November at the following prices:[1]

Pulse	*Source*	*Price per Metric Ton*
Green peas, max 3% admixture	Netherlands	$129.00
Yellow peas, crop 49, max 3% admixture	Denmark	130.00
Yellow peas, max 2% admixture	Sweden	125.00
White beans f.a.q. crop 49 2-3%	Angola	88.50
Green peas, 4% sterilized, crop 49	Morocco	94.00
Chickpeas, depending on quality	North Africa	87.00 - 94.00
Lentils, f.a.q. 4 mm crop 49	Algiers	158.00
Lentils, f.a.q. 5 mm	Algiers	199.00
Lentils, f.a.q. 6 mm	Algiers	220.00
Lentils, f.a.q. 5 mm......................	Chile	201.00
Lentils, extra large	Chile	221.00
Lentils, green	Turkey	138.00
(This sort is not much appreciated. Chilean lentils are preferred by the German consumer)		
Turkish red lentils are unsalable in Germany		

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[1] All prices are to be understood per 1,000 kg c.i.f. Hamburg.

Appreciation of U. S. Pulses

Shipments of Great Northern pea beans and Alaska peas were readily accepted and appreciated by Germany. The quality of U. S. No. 2 or better is much superior to shipments being received from other sources. They mentioned the fact that because of the exceptional high quality of U. S. beans and peas, that where trade can be negotiated a substantial premium would be gladly paid for the above classes. Beans purchased f.a.q. basis are often very inferior, containing up to 20 percent defects. However, it is usually understood by the trade that the foreign material and damage will not exceed 5 percent.

Examples of mixed beans and f.a.q. shipments are illustrated in figure 15.

Italy

Acreage and Production of Pulses

Pulses are produced throughout Italy, but the bulk of production of all pulse crops is on the Islands and in southern Italy except the white and cranberry-type beans which are produced largely in northern Italy. Acreage and production of pulses in Italy are indicated in table 23.

TABLE 23.-*Italy: Acreage and production of dry pulses, Average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans	1,231	1,247	1,240	1,238	3,571	2,979	3,501	3,909
Lentils	51	52	62	59	269	235	293	284
Dry peas	59	51	45	46	400	273	242	245
Chickpeas	241	240	274	269	838	694	1,142	1,400
Broad and Horse beans[2].	1,584	1,300	1,293	1,305	13,256	7,500	7,320	5,783

[1] Preliminary.

[2] Dry beans used principally for feed.

Dry Beans

The Po Valley of northern Italy is an important producing area of borlotti and saluggia (colored mottled cranberry-type) beans. (See figure 25.) Small quantities of these beans are often exported to south France for the use of Italians in that area. The cannellini (white kidney) bean is one of the better quality beans produced. It is usually grown under irrigation. When bean exports are made to the United States they are usually of this class for use by Italian people principally in New York City. A number of other classes of white beans grown in Italy or imported may be seen in figure 26. Prewar Italy imported dry haricot beans from Turkey, Yugoslavia, Hungary, Bulgaria, and Albania. Since the war, the main source has been United States and South Africa.

ITALY: CLASSES OF PEAS AND OTHER PULSES PRODUCED OR IMPORTED

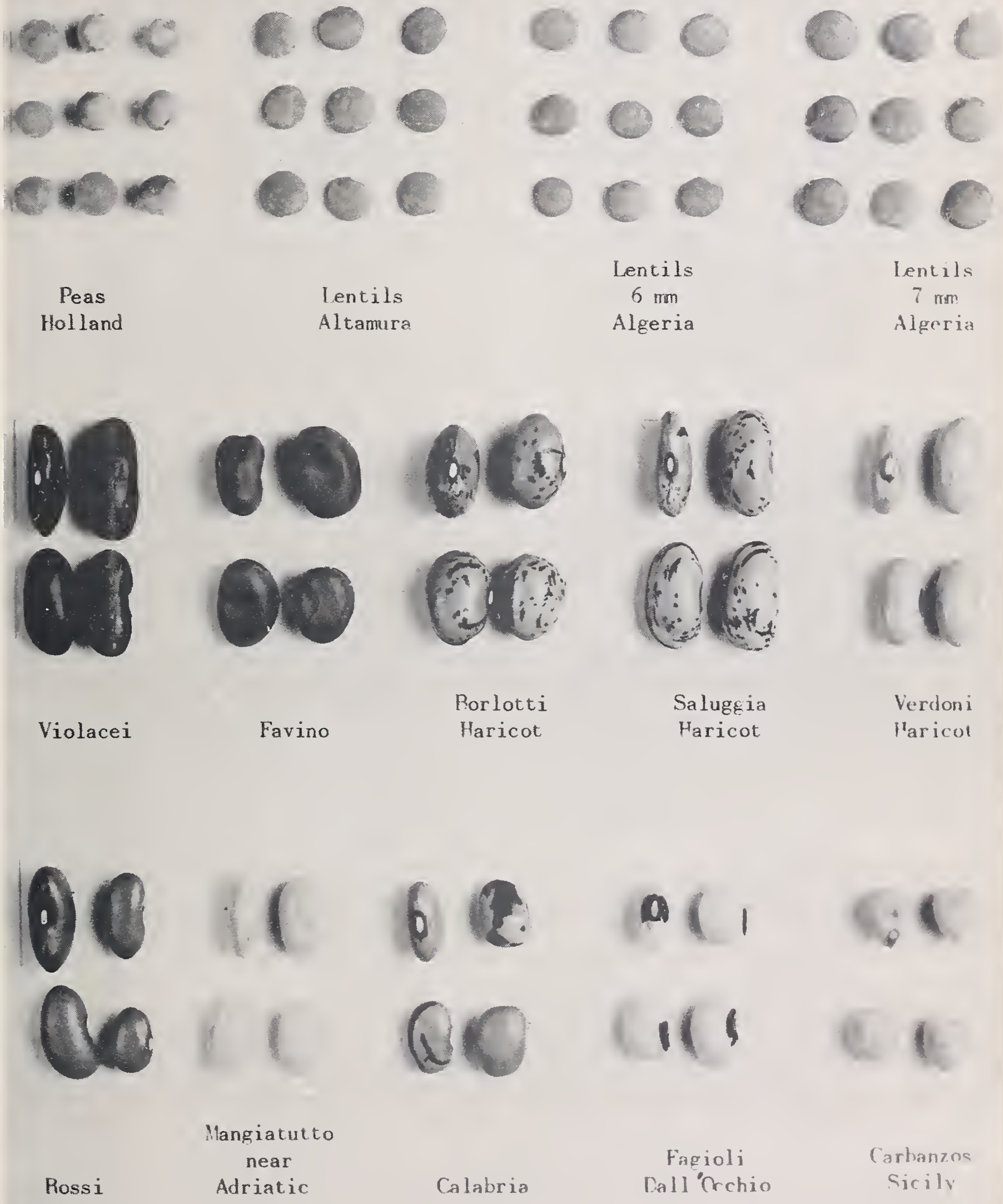

Figure 25

(Natural size)

ITALY: CLASSES OF WHITE BEANS PRODUCED OR IMPORTED

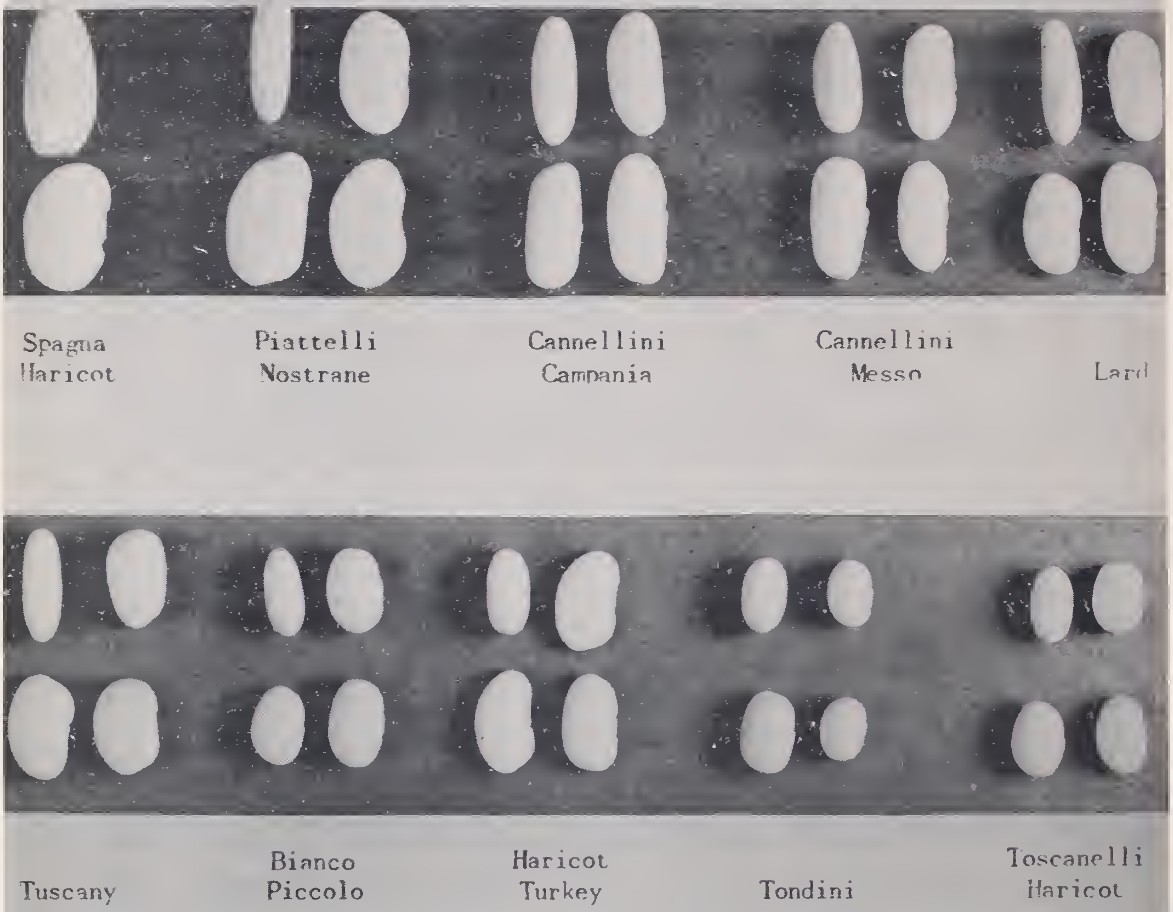

Figure 26

(Natural size)

Some green flageolet beans are produced in Italy, and seed is often exported to France for production of this type of bean. Some blackeye type beans are grown in Italy, but a large part of the blackeye acreage is grown for forage.

Peas

The production of dry peas has been small; however, requirements have remained small and imports of whole and split peas seldom exceed 200,000 bags. Before the war, substantial shipments were obtained from Hungary and the Netherlands. During the past 3 years the United States has supplied Italy with considerable dry green Alaska peas.

Lentils

The production of lentils in Italy is important, since about 60 percent of all the European production is in that country. Sicily is the most important producing area. The production in southern Italy together with the insular production accounts for about 90 percent of the Italian crop.

Italian lentils compared with Chilean and Algerian may be seen in figure 25. In addition to its use in lentil soup, this pulse is used as a vegetable. The Italian lentil is more green in color than the Chilean type. The large-sized lentils (6 and 7 millimeters) are usually exported at a higher price, and the 4 and 5 millimeter size are used by the Italians.

Broad and Horse Beans

Favas or broad beans occupy a little more acreage than the land used for production of haricot beans. Final estimates on dry horse beans indicate that, despite a larger acreage than 1948, the production was about 20 percent less. This drop may be ascribed to extremely dry weather and violent aphid attacks. About 40 percent of the fava crop is produced in Sicily. Sardinia and other Insular Italy are the more important producing areas with substantial quantities produced in south Italy. During the first half of 1949 Italy imported 3,168 metric tons of dry horse beans -- from Turkey (2,178) and Egypt (990). This compares with no exports in 1947 or 1948 or in 1938. More than half the production of beans is used for seed and consumed by animals, according to official estimates. During the 25 years before the war, approximately 400 thousand tons of fava beans were used for nonfood purposes each year as compared with human consumption of 150 to 225 thousand tons.

Garbanzos or Chickpeas

Sicily and south Italy are the more important producing areas of chickpeas. In 1938 Italy exported about 37,000 metric tons of chickpeas, compared with 19,079 in 1948. Because of the large production in 1949, somewhat larger exports may be expected in 1949. Some Italian people eat chickpeas traditionally on November 2 with pork. It was also noted that roasted garbanzos are sold like nuts and may account for a limited use.

Fava production is large in Sicily and southern Italy because it fits into the rotation pattern and because consumers, being very poor, are willing to eat them.

Consumption of Dry Pulses

Italians are among the largest consumers of dry pulses in Europe. The prewar per capita annual consumption for food was 29.7 pounds compared with about 32.0 pounds in Portugal and about 26.0 pounds for Greece. Northern Europe consumes much less per capita. Consumption of fava beans has decreased generally over the past 30 years from about 20 pounds per capita to about 4.5 pounds per capita. There has also been a decrease in consumption of other dry pulses, but one not so pronounced. Up until the early 1930's per capita consumption of dry beans averaged about 11 pounds. The average for 1910 to 1915 was about 12.5 pounds per person.

Consumption of dry peas and other pulses has averaged about 4.0 to 6.5 pounds per person per year during the last 30 years. In the past 5 years it has been on the low side. The decline in the consumption of dry edible legumes has been offset by an increased consumption of fresh legumes and vegetable crops. It has been estimated that the per capita consumption of all dry pulses for 1948-49 was about 16.5 pounds (made up of 5.3 pounds of favas, 7.0 pounds of haricot beans, and about 4.2 pounds of other pulses and pulse flour). Some chickpeas are ground into flour for use in bread and cake-making from Christmas to Easter. A small quantity of chickpeas is also used in coffee stretching.

The use of dry edible legumes as a meat substitute on Friday and during Lent accounts for an important disappearance of these commodities in Italy.

Lupines

A few lupines are used for food and coffee stretching, but are generally produced as a forage crop for sheep. Most common is the bitter lupine which is more suited for green manure than the other lupines.

Turkey

Production

Dry pulse production is very important in Turkey. The 1949 acreage of dry pulses was 6.6 percent below that of 1948. However, the total production in 1949 shows a decrease of 22.6 percent below the 1948 crop. Detailed acreage and production figures of the important pulse crops are indicated in table 24.

TABLE 24.-*Turkey: Acreage and production of dry pulses, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans	185	227	245	233	1,390	1,914	2,050	1,658
Garbanzos.............	174	210	225	188	1,227	1,703	1,918	1,375
Lentils	76	93	101	106	502	695	882	750
Peas	7	5	5	4	36	23	22	17
Broad beans	173	130	116	115	1,263	883	838	570
Total	615	665	692	646	4,418	5,218	5,710	4,370

[1] Preliminary.

Exports

Turkey exports substantial quantities of dry pulses to a number of different European countries. Generally the quality of the dry edible legumes exported are inferior to the production of these commodities in Europe. Because the different pulses can be obtained very cheaply from Turkey by European importers large shipments are made to northern Europe for cleaning and milling. Some are used locally and the balance re-exported. (See figure 32.)

Export trade for 1948 and for the first 6 months of 1949 by countries of destination may be seen in table 25.

TABLE 25.-*Turkey: Export of pulses, in 100-pound bags, 1948 to January-June 1949*

COUNTRY OF DESTINATION	BROAD BEANS		CHICKPEAS		NAVY BEANS		LENTILS	
	1948	1949	1948	1949	1948	1949	1948	1949
	1,000 bags	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Austria................	–	51	–	21	–	–	–	–
Belgium................	–	–	9	1	–	–	1	1
Czechoslovakia.........	–	–	44	–	–	34	–	–
France.................	130	4	21	–	7	–	22	(1)
Germany................	–	–	46	–	–	–	69	–
Netherlands............	–	–	50	1	–	–	–	–
England................	7	10	–	1	11	(1)	171	84
Spain..................	–	–	–	2	–	–	–	–
Switzerland............	37	38	–	44	2	1	–	22
Italy..................	52	–	42	(1)	11	–	2	–
Malta..................	32	9	26	7	4	1	–	1
Greece.................	18	27	5	1	112	62	1	1
Palestine..............	27	68	6	32	15	(1)	17	–
Other..................	4	12	17	13	10	4	26	4
Total............	307	219	266	123	172	102	309	113

[1] Less than 500 bags.

Portugal

Introduction

Among crops of dry pulses in Portugal, the most important from a food standpoint is that of dry edible beans. These beans are very popular, notably among the laboring classes and represent a prominent item of diet for consumption almost every day. Next in importance are chickpeas, which are used considerably by Portuguese and Spanish-speaking people. Other dry legumes such as peas and broad beans are not consumed as food regularly or in very large quantities. However, as feedstuff for livestock, there is regular demand for broad beans.

Production

Weather conditions were very unfavorable for a good crop in 1949. Early rains were comparatively light and poorly spaced, and were followed by prolonged drought through months of harvest.

In order to maintain the production of dry edible beans in Portugal, acreages have been increased. Yields have been gradually decreasing. The average acreage for the 1935-39 period was 415,000 acres. The average for the next 5-year period, 1940-44, was 67 percent greater at 696,000 acres. The 1948 and 1949 acreages have increased to well over 200 percent of the 1935-39 average. (See table 26.)

TABLE 26.-*Portugal: Acreage and production of dry pulses, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935–39	1940–44	1948	1949[1]	1935–39	1940–44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans	415	696	981	951	856	907	904	617
Garbanzos	83	89	94	91	270	285	265	204
Broad and horse beans.	454	357	350	360	3,279	2,364	2,300	2,400
Total	952	1,142	1,425	1,402	4,405	3,556	3,469	3,221

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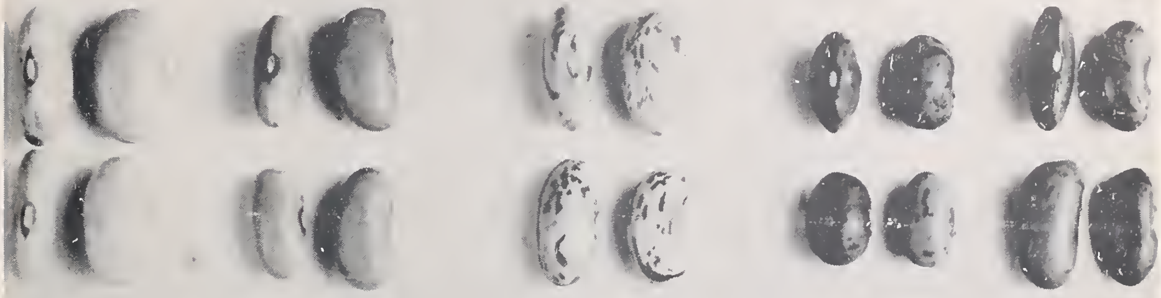
[1] Preliminary.

Dry Edible Beans

There are many varieties of dry edible beans produced in Portugal. (See figure 27.) White beans are apparently the most important, and the trade estimates the following percentage distribution of individual varieties in total domestic consumption:

	Percent
White beans (various kinds)	35
Frade (white eyed)	15
Manteiga (pink)	7
Catarino (cranberry)	7
Moleiro	7
Encarnado (light red kidney)	6
Canario (canary color)	3
Avinhado (dark red kidney)	2
Amavelo (yellow)	2
All others	16
Total	100

PORTUGAL: CLASSES OF BEANS AND OTHER PULSES GROWN OR IMPORTED



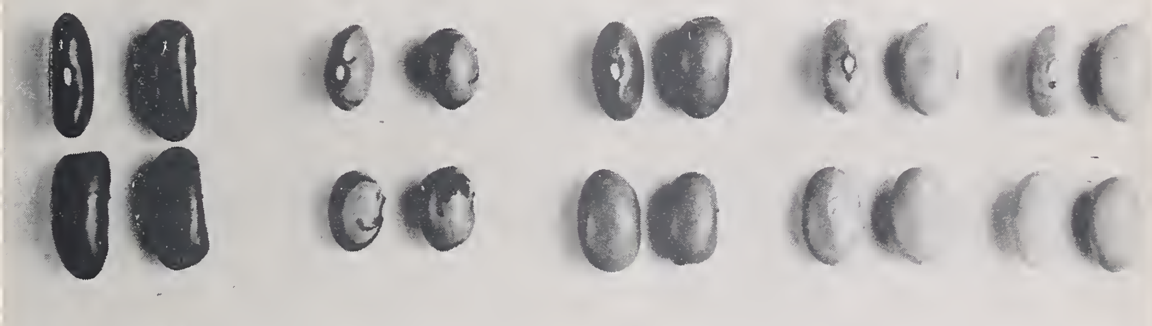
Manteiga
(Pink)

Manteiga (Pink)
Mocambique

Catarino
(Cranberry)

Catarino
(Cranberry)
Angola

Vermelho
(Red)



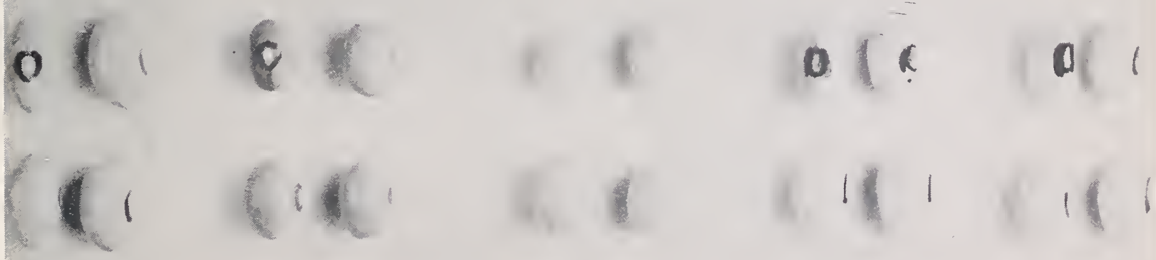
Avinhado
(Dark Red Kidney)
Angola

Rajado
Angola

Encarnado
Angola

Pardo
Angola

Verde
(Green)
Angola



Canario
(Canary)

Canario (Canary)
Angola

Perola (Pearl)
Angola

Frade
(Blackeye)

Frade
(Blackeye)
Angola

FIGURE 27

(Natural Size)

PORTUGAL: CLASSES OF BEANS AND OTHER PULSES GROWN OR IMPORTED

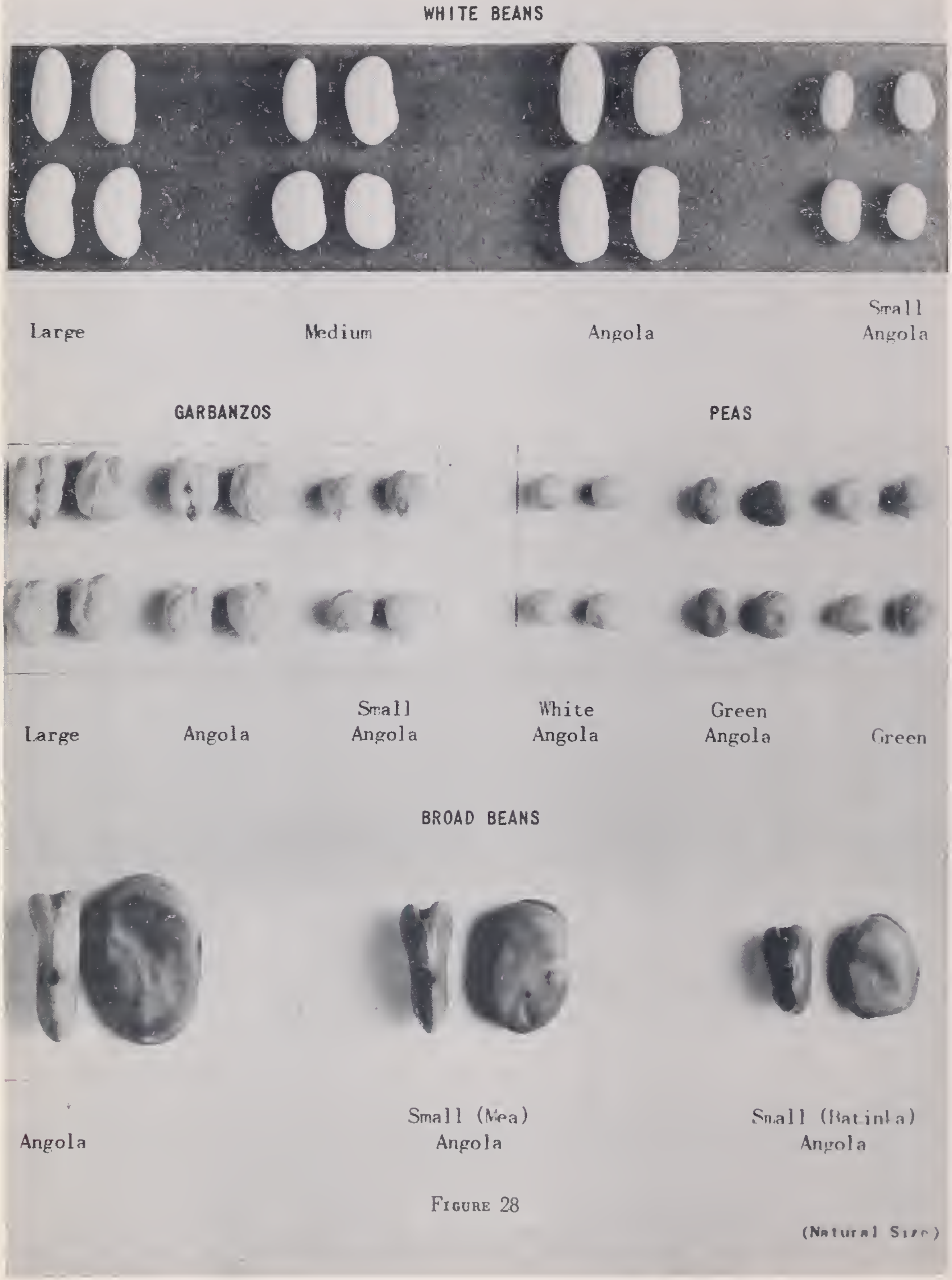


FIGURE 28

(Natural Size)

SPAIN: CLASSES OF COLORED BEANS PRODUCED

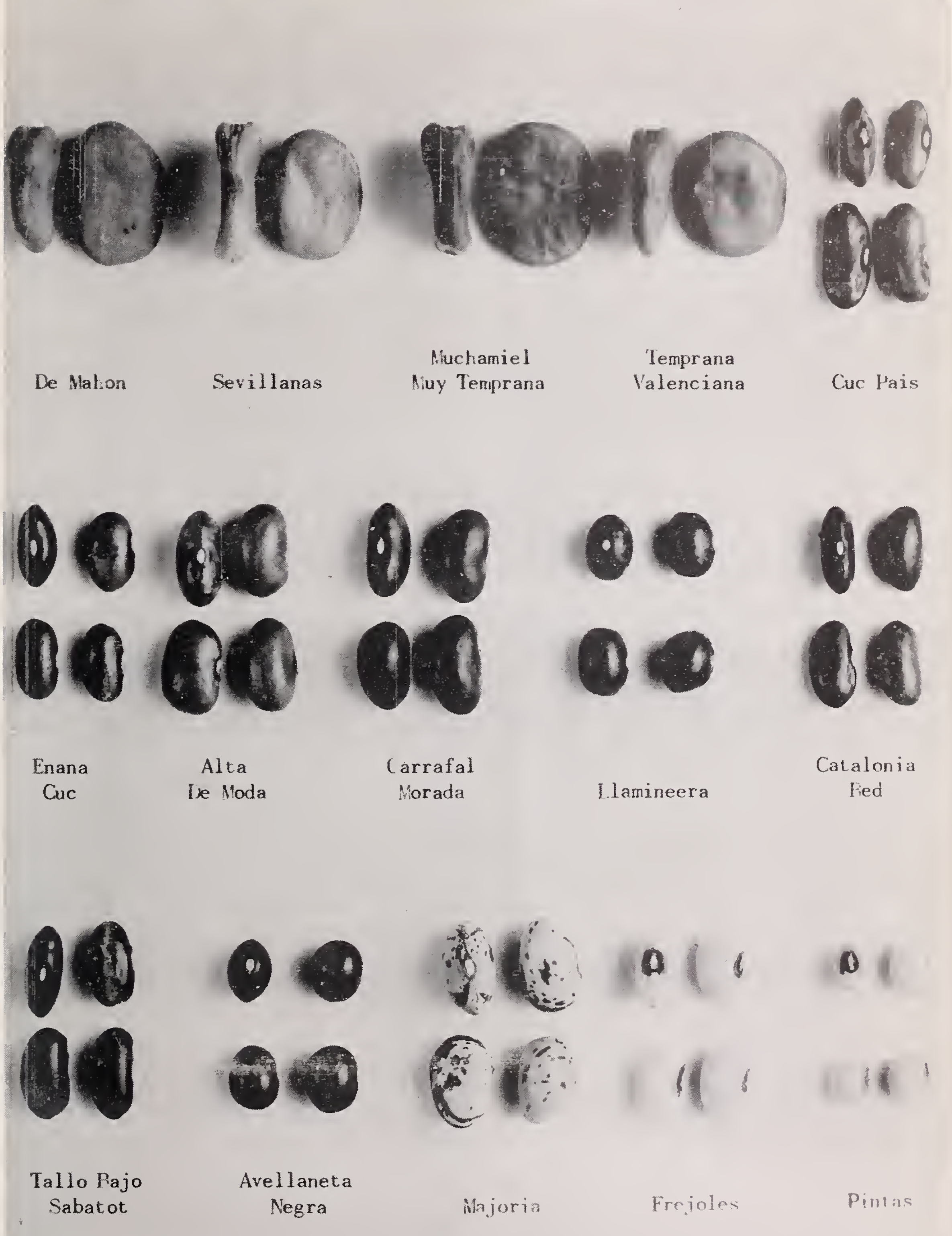
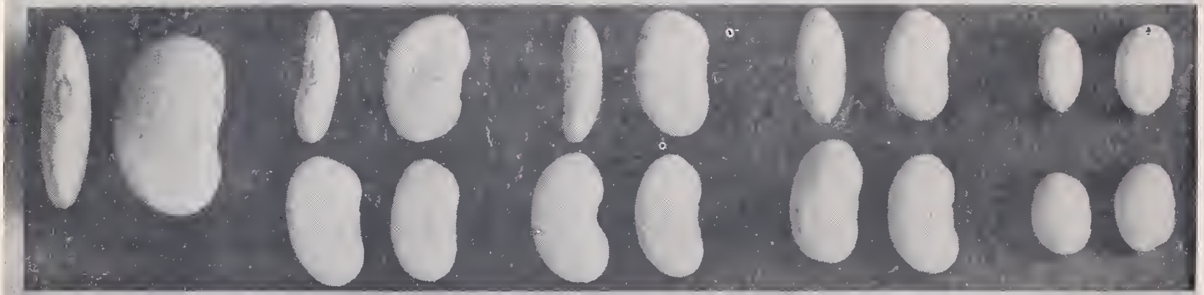


Figure 29

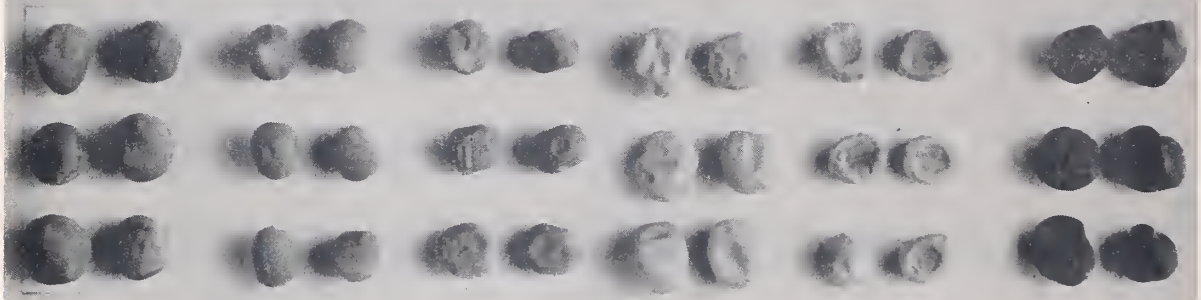
(Natural Size)

SPAIN: CLASSES OF WHITE BEANS AND OTHER DRY PULSES GROWN OR IMPORTED

BEANS



PEAS



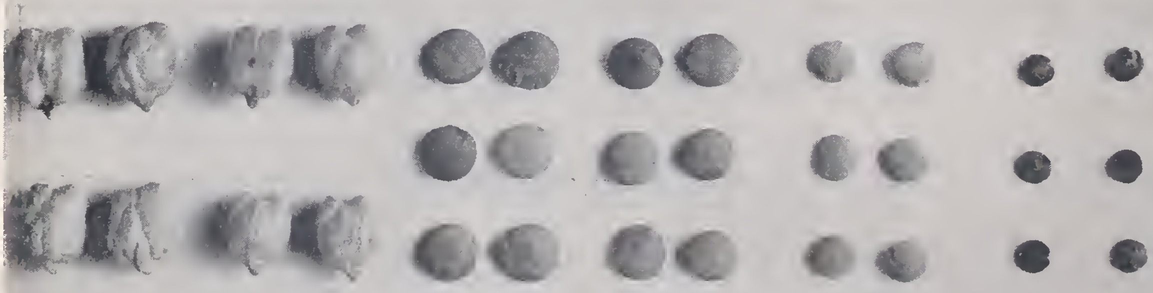


Figure 30

(Natural Size)

Imports

Portugal produces sufficient beans in good years for its consumption. However, in years of poor production, it is forced to import beans from Angola, which has a large production.

Average imports for the 1945-47 period were 12,997 metric tons. Estimates are that approximately 20,000 metric tons were imported between September 1949 and March 1950. The per-capita consumption of dry beans for the 1945-47 period was 11.5 pounds.

Chickpeas

While there are several varieties of chickpeas, they are locally classified according to size and are called small, medium, and large. (See figure 28.) Production is usually sufficient even in poor years, and if there is a demand from other countries there is an exportable surplus in the best years. Average consumption for the period 1945 to 1948 inclusive was 9,386 metric tons or about 2.5 pounds per person.

Broad Beans

Broad beans are produced on a large scale and when green are used as food by the population. It is estimated by the trade that about 10 percent of the total production is used, green, for food. The balance is ripened and about 98 percent of the dry beans are used for feed, especially for horses. (See figure 28) The other 2 percent are eaten as food. The acreage of horse beans has fallen off greatly in the last few years, due to the losses the farmers have suffered from decreases in yield because of poor weather and insect damage.

Peas

No official figures or estimates are obtainable on production of peas in Portugal. The peas produced locally are mostly eaten green. A very small amount is canned in years of large production, and only 3,000 to 5,000 bags of 100 pounds are used dry. Practically all of the dry peas used are whole. There is no interest in importing peas other than from the Portuguese colonies.

Lentils

Very small amounts are produced and used as food. During 1946 when Portugal began to replenish its food locker, which was practically exhausted, a few small imports were made. However, the small production is generally sufficient.

Spain

Production

Both the acreage and production of dry pulses in Spain were greater in 1949 than in the previous year. The 2,075,000 acres of dry pulses planted in 1949 was somewhat above the 1,862,000 acreage for 1935-39. In spite of the larger acreage, however, the production declined from 10,712,000 bags in the 1935-39 period to only 7,868,000 bags in 1949.

Garbanzos

Spain produces more garbanzos than any other country in Europe, and exceeds the production of this commodity in Mexico. Spain's yield was only 294 pounds per acre in 1949 and only 197 pounds in 1948. This compares with yields of 624 and 714 bags respectively for Mexico. Acreage and production of pulses will be found in table 27.

The Spanish people require large quantities of garbanzos, as they are one of the more important legume dishes served in Spain. (See figure 30.) In 1946 and 1947 substantial imports were obtained from Mexico and Turkey. In 1948 imports from Mexico totaled 172,815 bags of 100 pounds but in 1949 Mexico required dollars, and satisfactory payments could not be arranged. Spain had very few dollars and no business was carried on between these countries. Garbanzo imports were principally from Algeria and French Morocco in 1949. The quality and size of the Spanish-produced Garbanzo is excellent, but requirements exceed the supply.

TABLE 27.-*Spain: Acreage and production of dry pulses average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949[1]	1935-39	1940-44	1948	1949[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans.............	600	610	550	600	3,400	2,341	1,764	1,984
Dry peas..............	122	127	89	90	700	570	406	397
Lentils...............	55	104	128	125	293	423	441	441
Garbanzos.............	631	1,010	872	900	3,040	3,216	1,715	2,646
Broad and horse beans..	454	357	350	360	3,279	2,364	2,300	2,400
Total............	1,862	2,208	1,989	2,075	10,712	8,914	6,626	7,868

[2] Preliminary.

Lentils

Spain has had a greater acreage of lentils than any other country of record since prewar. Chile had an average of 110,000 acres for the 1935-39 period when Spain had only one-half of this area planted to lentils. The acreage increased to 128,000 in 1948 and 125,000 in 1949. Spain has the lowest acre yields of any lentil producing country in Europe but is the leading producer of this commodity. In 1949 a yield of only 353 pounds was recorded with 441,000 bags produced. This production was exceeded by Egypt, Turkey, Syria, and Argentina due to much higher acre yields. In 1946, 1947, and 1948 Spain imported considerable lentils from Argentina with a small quantity imported in 1949. More than 204,000 bags of 100 pounds were imported from Argentina in 1947, comprising the largest lentil import in recent years.

Dry Beans

Although the acreage of dry beans in Spain has not deviated greatly from 600,000 acres since 1935, the production has been greatly decreased. The average for the prewar, 1935-39 period, was 3,400,000 bags of 100 pounds while production was only 1,764,000 bags in 1948 and 1,984,000 bags in 1949. Dry edible beans have been imported principally from Argentina, Brazil, and Portuguese West Africa during recent years. Imports have been greatly decreased during the last few years. For example, 511,284 bags of 100 pounds were imported in 1946; 396,301 bags in 1947; 183,240 bags in 1948; and only 14,083 bags for the first 5 months of 1949. In earlier years Spain obtained substantial imports from Poland, Bulgaria, Rumania, and Yugoslavia.

Dry Peas

The production of dry peas was only 397,000 bags for 1949, the smallest crop of any recent year. The average for the 1935-39 period was about 700,000 bags. The acreage is down from 127,000 acres in the 1940-44 period to about 90,000 acres for 1948 and 1949. Imports of dry peas in recent years have been insignificant. However, prewar shipments were received from Belgium, France, Great Britain, and Holland. (See figure 30.)

The consumption of fresh green peas is relatively important compared with dry peas used for food.

Broad and Horse Beans

Habas, or broad and horse beans, are used for human consumption to some extent in Spain, although, generally speaking, they are used for feeding livestock. "Habas a la Cataloni" (Catalonian style horse beans) are a well-known dish in Catalonia and are prepared from horse beans shelled green. Most of the dry horse beans used for food are ground into flour and mixed with wheat flour for use in breads and the meal is often used in soup. (See figure 29.)

Dry Pulse Requirements

Spain has always been an importer of dry pulses but because of the governmental restrictions on imports in recent years it is reported that eating habits are being shifted away from dry edible legumes to more potatoes and green vegetables. There is a large potential white bean market, of Great Northern type, in Spain provided dollars can be made available. The requirements in Spain are mostly for white beans, lentils, and garbanzos.

Spain Interested in United States Varieties

Dry bean production has been curtailed considerably by attacks of red fleas. Plant breeders of the Ministerio De Agriculture are anxious to try varieties of beans and peas grown commercially in the United States for seeding purposes. It is hoped that some of these varieties may be more resistant or less attractive to the red fleas and that yields per acre may be increased. In northwest Spain several types of white beans are produced. Some of the beans produced in Spain are runner type. Very often the beans are grown as catch crops after potatoes. These beans are grown on dry land where water may be carried to get the beans started.

Greece

Pulse Production Inadequate

This country has always imported a substantial part of its requirements of dry edible pulses. (See figure 31.) Before the war dry beans were obtained from nearby sources such as Yugoslavia with minor amounts from Rumania and Albania. Pulses are a favorite food with rural people and with the working classes.

Edible pulses cooked with olive oil are the main dish, and in many cases the only dish of the farmers and working classes in Greece, especially during the winter months. The white beans are the most important pulses grown and used in Greece. A large white flat type, on the order of the U. S. Great Northern beans and white kidney beans, is preferred. However, a small bean more on the order of the Michigan pea bean is grown in northern Greece and similar types are imported by Greece as indicated in figure 33.

During the spring and summer, considerable quantities of beans, peas, and broad beans planted to be harvested for food or feed, are picked in the green state. It is estimated that about 15 percent of the crop is utilized in this manner. In the case of dry beans and peas the portion of the crop not picked green is harvested ripe. Broad beans and horse beans not picked green are harvested, vines and all, for feed, and may or may not be threshed.

Per capita consumption before the war was reported at 30 to 32 pounds per year. It was not possible to produce these requirements so imports were necessary. Since the war pulses have not been imported in sufficient quantities to permit the prewar consumption rate. Large quantities of dry beans and chickpeas were imported by the United Nations Relief and Rehabilitation Administration in 1946, but imports declined sharply again in 1947. (See table 28.)

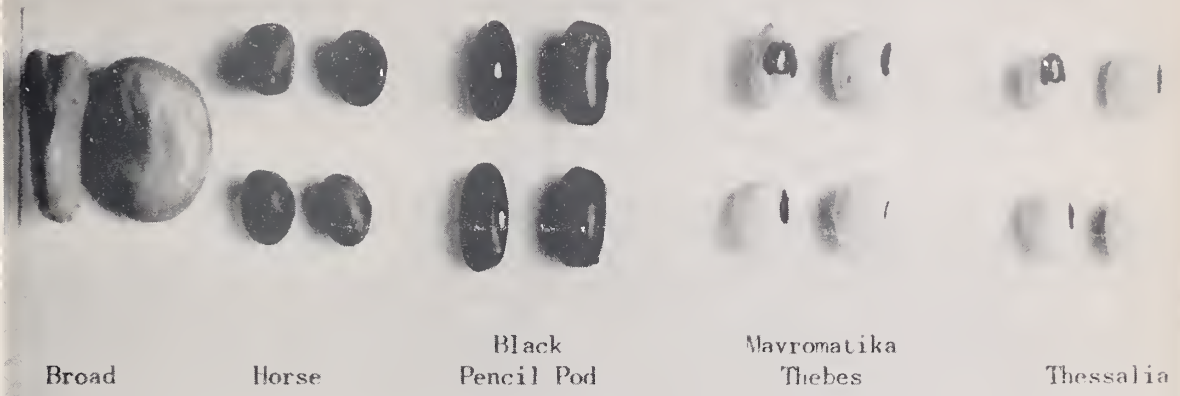
TABLE 28.-*Greece: Imports of pulses*

PULSE	1938	1939	1946	1947	1948	1949[1]
	1,000 bags of 100 lbs.					
Dry beans	334	163	[2]289	194	489	325
Broad beans	6	2	14	41	19	52
Lentils	44	27	–	29	90	43
Chickpeas	36	3	[3]399	9	4	4
Peas	12	1	[4]87	1	1	0
Total	432	196	789	274	603	424

[1] First 10 months only.
[2] 109 by UNRRA.
[3] 392 by UNRRA.
[4] 87 by UNRRA.

GREECE: CLASSES OF BEANS AND OTHER PULSES GROWN

BEANS



VETCH

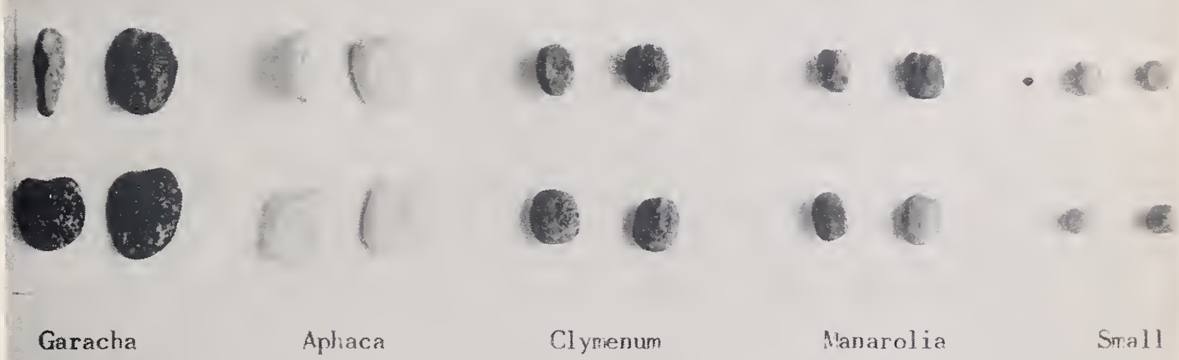


Figure 31

TURKEY: CLASSES OF BEANS AND OTHER PULSES GROWN

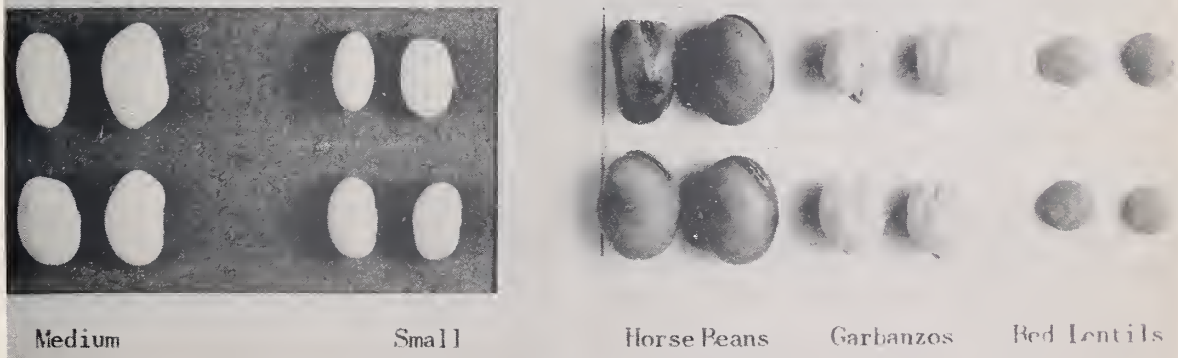
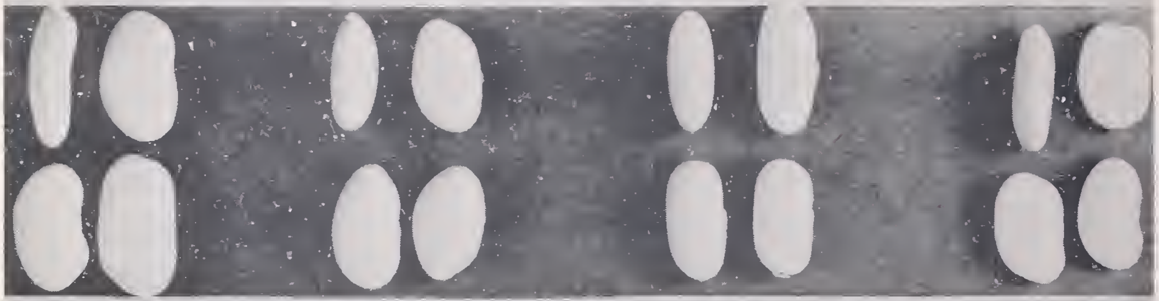


Figure 32

(Natural Size)

GREECE: CLASSES OF WHITE BEANS PRODUCED OR IMPORTED

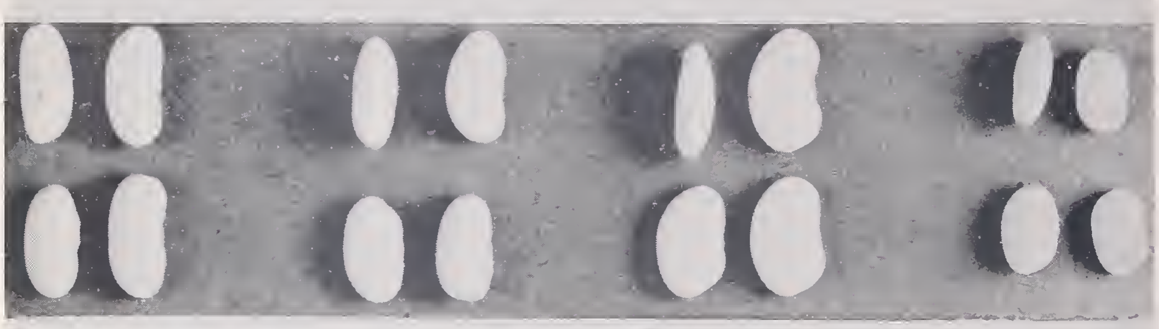


Tasoulia
Kastoria

Flageolet
Tuscany

Cannellini
Italy

Tasoulia
Florina

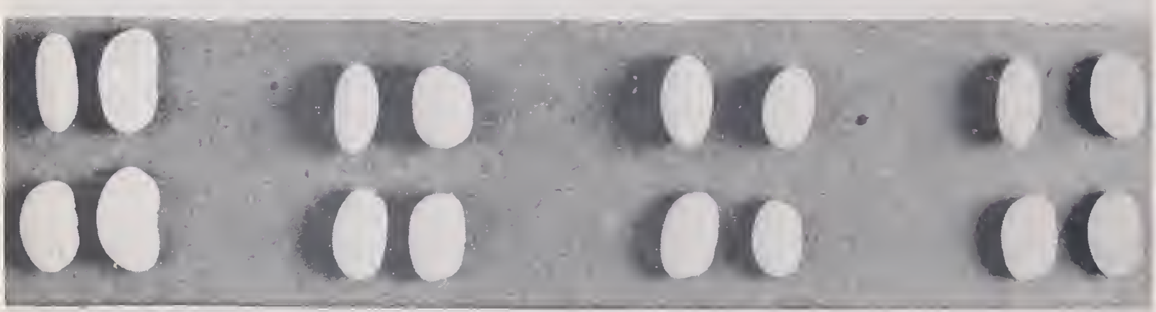


Horoza
(Koufeto)
Macedonia

Thrace

Tsalia
Macedonia

Turkish



Medium
Macedonia

Tondini
Tuscany

Small
Macedonia

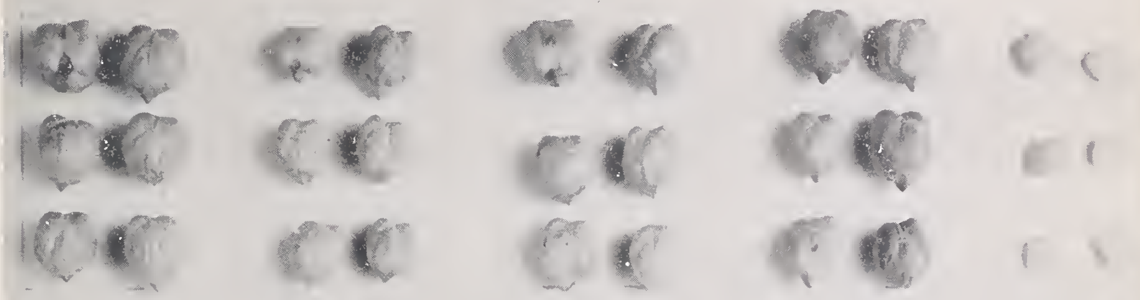
Macedonia

FIGURE 33

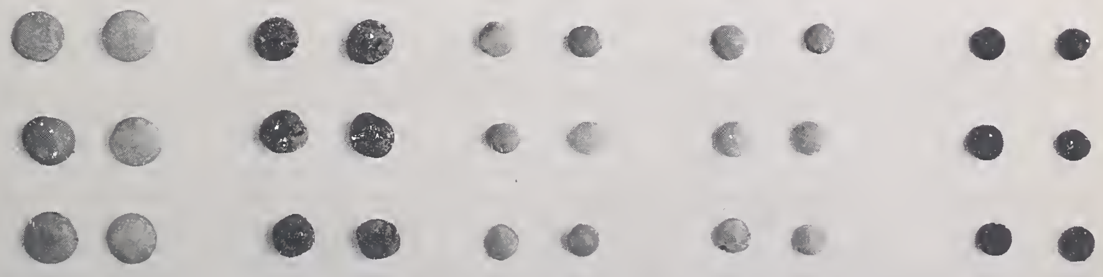
(Natural size)

GREECE: CLASSES OF GARBANZOS, LENTILS AND PEAS PRODUCED OR IMPORTED

GARBANZOS



LENTILS



PEAS

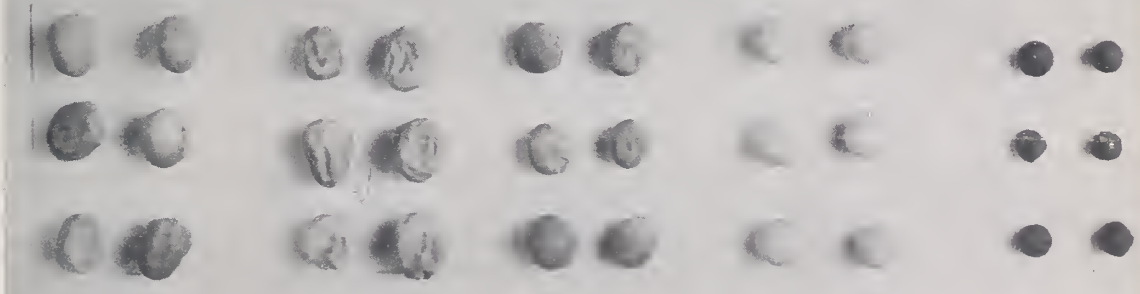


Figure 34

(Natural size)

ENGLAND: CLASSES OF BEANS AND OTHER PULSES GROWN OR IMPORTED

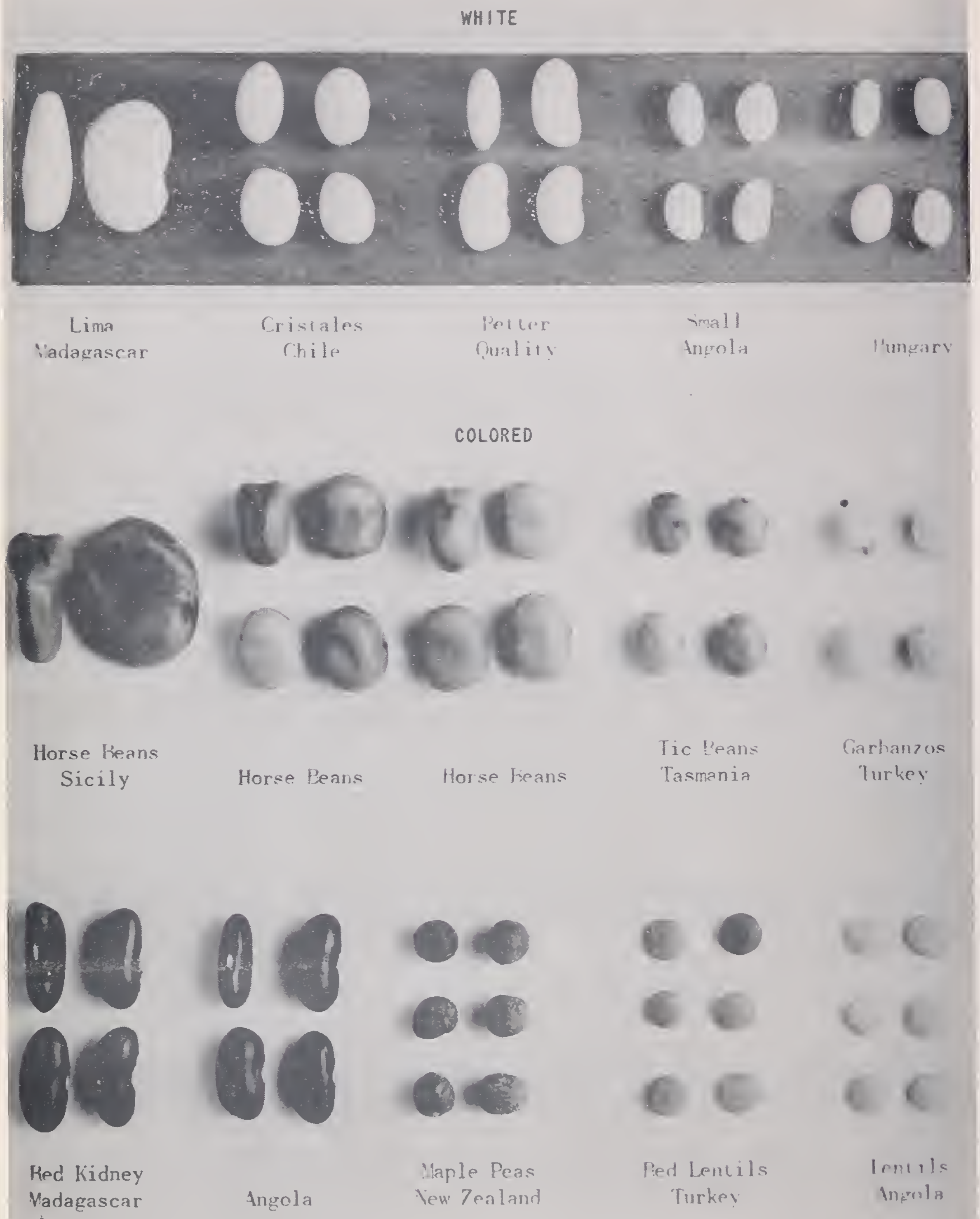


Figure 35

(Natural size)

ENGLAND: CLASSES OF PEAS GROWN OR IMPORTED

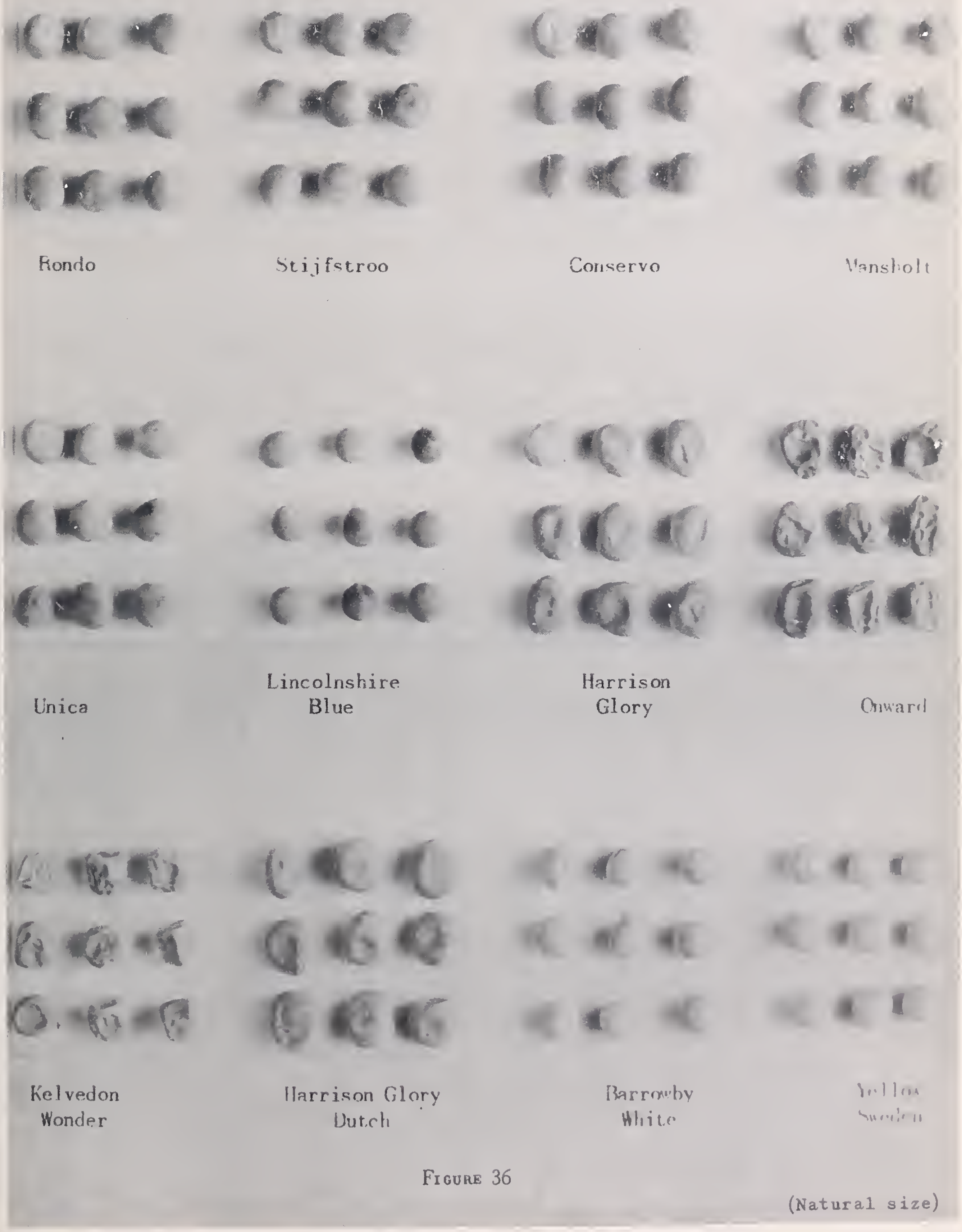


Figure 36

(Natural size)

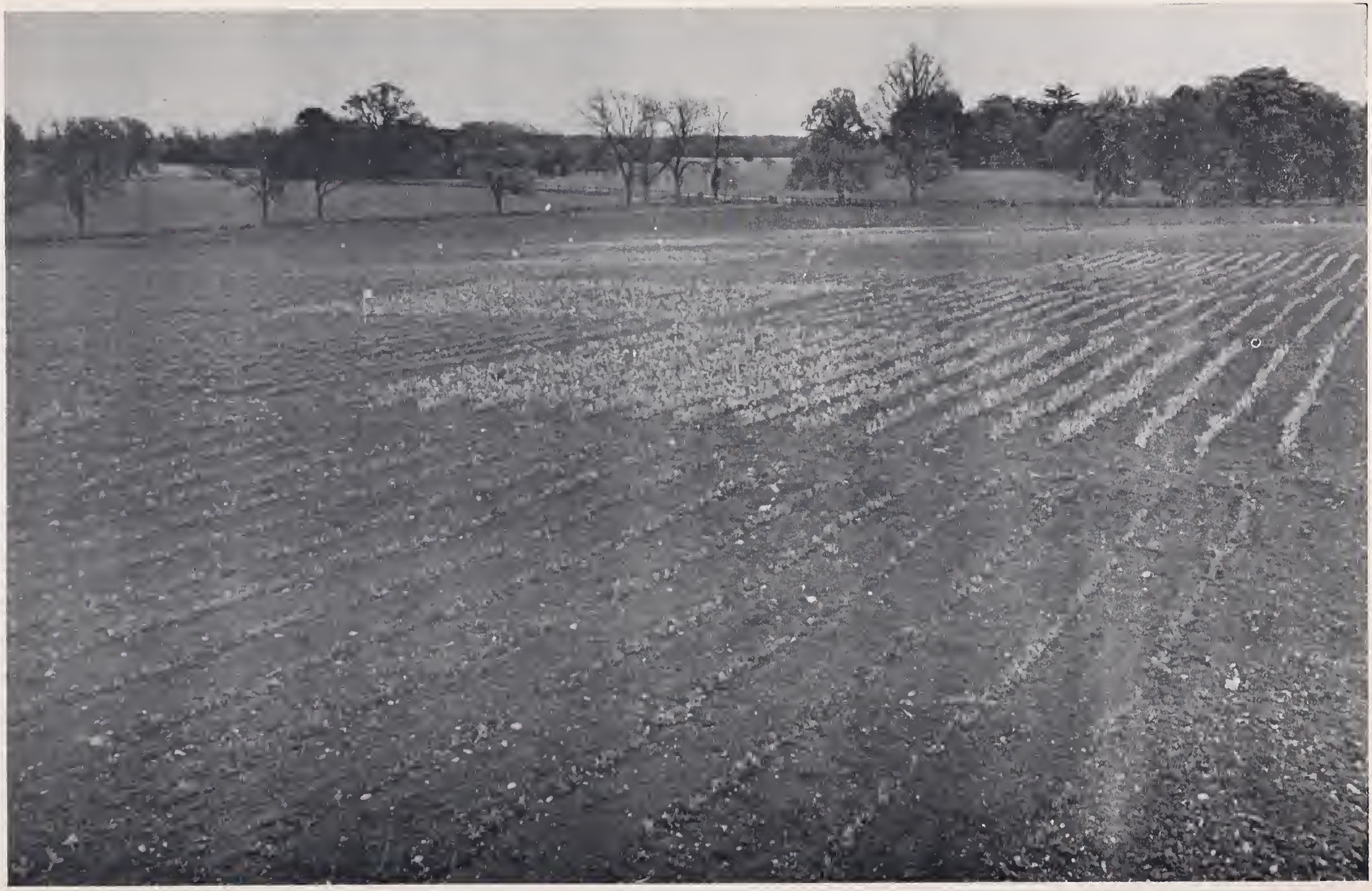


FIGURE 37.- Dry pea trial grounds in England.

Imports

In 1948 Greece imported 291,000 bags of white beans from the United States, 78,000 bags from Turkey, and 57,000 bags from Chile. During the 10-month period of 1949, 152,000 bags of white beans were imported from the United States. This compares with 124,000 bags from Turkey and about 49,000 bags from Chile in the same 10 months.

About 51,000 bags of broad beans were imported from Turkey in 1949 mostly for feed, and a few small shipments of chickpeas were obtained from Turkey for food purposes. There is a preference for Great Northern beans in Greece and if dollars could be obtained considerable business would be negotiated. It is possible that some ECA funds will be used for dry bean procurements for Greece, but such transactions are now too late to move very many U. S. beans this crop year.

Fresh Consumption

It has not been possible to determine the quantity of pulses consumed on a fresh basis. However, it is apparent that large quantities of kidney beans (white) and broad beans are cooked fresh. (See figure 33.) Usually the fresh beans are cooked with onions and olive oil. Broad beans are planted in the fall and green pods are ready for picking early in March and are available until June. Consumption of other pulses on a fresh basis is from May through November.

Program to Produce More Beans

Under the ECA recovery program in Greece, there is a plan to increase acreage of dry beans in that country to make it self sufficient for pulses in a few years time. It is indicated in table 29 how the acreage of beans has increased from 60,000 acres in 1940-44 to 100,000 in 1949. However, the acreages of other pulses have not increased. Greek officials do not think that sufficient white beans can be produced for the country to become self-sufficient because of the lack of suitable land.

TABLE 29.-*Greece: Acreage and production of dry pulses, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949	1935-39	1940-44	1948	1949
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry beans	63	60	78	100	368	350	558	600
Lentils	26	26	27	24	126	125	127	110
Garbanzos	51	50	50	46	255	300	309	276
Broad and horse beans	58	60.	67	55	474	400	423	386

Some peas are grown in the Mountains, but are used locally and do not get into commercial distribution. Peas are used both whole and split, yellow or green, in about equal amounts. (See figure 34.)

Requirements

The requirements over and above the 1949 production are expected to be about 375,000 bags of 100 pounds. This is based on a 2,519-calorie requirement per capita per day. It is likely because of the dollar shortage that much of this requirement will not be met although a few small shipments of white beans may be imported from Turkey.

United Kingdom

Dry Peas Important

The only pulse crop of commercial importance for edible consumption which is produced in the United Kingdom is dry peas. (See figure 36.) England and Wales produce almost the entire crop. Dry green pea production increased sharply in the postwar period. Actually, since 1937, the acreage increase has been tenfold, being increased from 18,000 acres in 1937, to 180,000 in 1948. The average production for the period 1935-39 was only 336,000 bags of 100 pounds compared with 3,248,000 bags for the 1949 crop. Actually the acreage for 1949 was about 2,000 acres below that for 1948, but much higher yields were obtained. In 1949 an acre yield of 1,825 pounds was obtained, compared with only 1,344 pounds in 1948.

Because of heavy requirements for pulses in the United Kingdom and because of lack of funds to import large quantities of dry beans, increased production of dry peas was encouraged. The production of 3,248,000 bags in 1949 ranks the United Kingdom the most important dry pea producing country in Europe. Germany, including the Soviet Zone, only produced 1,485,000 bags in 1949 and Netherlands 1,460,000 bags. It is expected that 1950 acreage will be reduced because price guarantees will not apply to the 1950 crop. During and after the war guaranteed prices encouraged increased acreages. It is also reported that the large 1949 crop has resulted in large stocks.

Most of the peas grown in England are green except for a few yellow peas grown in Essex. Green peas are grown mostly in the northern half of England. Hulland and the Isle of Ely produce green peas.

Dry Edible Bean and Pea Imports

The United Kingdom is interested in white beans principally from sterling and soft currency areas. It is reported that subject to issuance of import licenses, 2,000 tons of Japanese ohtenashi beans were transacted at about $5.71 per 100 pounds c.i.f. This was reported by one of the large London grain firms March 13. It was also reported that Chilean arroz for March and April shipments were being made as low as $6.12 or equivalent c.i.f.

Imports of dry edible beans and peas for the calendar years 1948 and 1949 are indicated in table 30. Imports of dry peas, haricot beans, and other beans increased in 1949 over 1948. In addition to the above, substantial quantities of baked beans have been imported from France.

TABLE 30.-*United Kingdom: Imports of dry pulses, annual 1948 and 1949*

PULSE	1948	1949
	100-pound bags	*100-pound bags*
Dry peas	303,112	314,463
Haricot beans	208,042	624,164
Other beans	145,145	157,483
Total	656,299	1,096,110

Broad and Horse Beans

The acreage of horse beans has decreased from an average of 209,000 acres in the 1940-44 period to 88,000 acres in 1948. The production of more essential crops in latter years has been necessary in spite of a heavy import requirement for animal feeds. In addition to the horse beans grown or imported for food, substantial quantities are required for animal and bird feeding. (See figure 35.) Part of the horse beans are grown in England for feeding local farm animals; and other quantities are grown expressly to meet a demand in Scotland during the winter months. Owing to the vigorous winters experienced in the North, it is customary for the cattle to be brought into the settlements and housed and fed in barns until spring. The Highlands are reported to be snow-covered for several months, and natural feeding grasses are not available.

The quantities grown in Great Britain are not sufficient to meet requirements and therefore the domestic bean crop is supplemented by imports of horse beans in which considerable business is done annually with China, Algeria, Tunisia, Morocco, Iraq, and at times with Turkey and Sicily. Horse beans are said to be highly nutritious for cattle feed and maintain good milk yields when other natural feeding stuffs are not available.

The tic bean, which is a small horse bean, is grown in England and also imported from New Zealand and Tasmania. This is a small round bean, a little larger than a pea, and this size is especially desirable for pigeon feeding. Probably the largest requirement for the tic bean is from the pigeon-feed mixers. It is also reported that this bean is used to feed ponies.

The acreage and production of dry field peas and horse beans are indicated in table 31.

TABLE 31.-*United Kingdom: Acreage and production of dry field peas and horse beans, average 1935-39 and 1940-44, annual 1948 and 1949*

PULSE	ACREAGE				PRODUCTION			
	AVERAGE		ANNUAL		AVERAGE		ANNUAL	
	1935-39	1940-44	1948	1949	1935-39	1940-44	1948	1949
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 bags*	*1,000 bags*	*1,000 bags*	*1,000 bags*
Dry peas	20	73	180	178	336	1,250	2,419	3,248
Broad beans	123	209	88	109	2,173	3,387	1,568	1,859

Per Capita Consumption

The average per capita consumption of dry pulses for the 1934-38 period was 7.3 pounds, but only 5.1 pounds in 1948-49. The 1949-50 per capita consumption is expected to be about 7.7 pounds. The requirements for field seed and food may be seen in table 32.

TABLE 32.-*United Kingdom: Utilization of pulse crops*

USE	1934-38	1948-49	EXPECTED 1949-50
	1,000 bags	*1,000 bags*	*1,000 bags*
Seed..............................	66	220	220
Feed and wasted....................	66	507	661
Food..............................	3,438	2,490	3,900

Dry Peas for Canning

The canning of dry peas in England has been fairly satisfactory. Some of the larger canning plants have maintained large experimental grounds where new varieties have been developed satisfactorily for processing dry. As much as 50 percent of the dry pea crop may be canned, according to some reports. The canning of dry peas during the winter months makes it possible to keep the canneries open more months in the year and keep more people employed annually. Vegetables have been scarce during the last year and it has been possible to sell large quantities of the canned peas. Very special care is taken, from planting until the peas are canned, to produce top quality. It is always the aim to produce and offer for sale green peas as nearly comparable as possible to the fresh pod peas available during the summer months. Examples of good breeding, curing, and harvesting may be seen in figures 37 through 42.

English seedsmen rely on high quality seed from New Zealand and Tasmania. The climate of these islands is well suited to the production of excellent dry pea seed. Various strains are grown under contract for English seedsmen and are shipped to England to build up the stock for English seeding.

In prewar years a very popular type of marrowfat pea (green semiwrinkled) was shipped from Japan. Even up to the beginning of the war considerable quantities were received in London, Liverpool, and Glasgow, and were about as important as shipments from the Netherlands. There is some advantage to obtaining peas from Belgium and the Netherlands because of the short voyage. Traders do not have to take the risks of long shipments subject to insect infestation and fluctuating markets when peas are obtained from neighboring countries.

Maple and Dun Peas

Some maple and dun peas are grown in the United Kingdom. However, the quality and seed type are more nearly perfection when these peas are imported from New Zealand

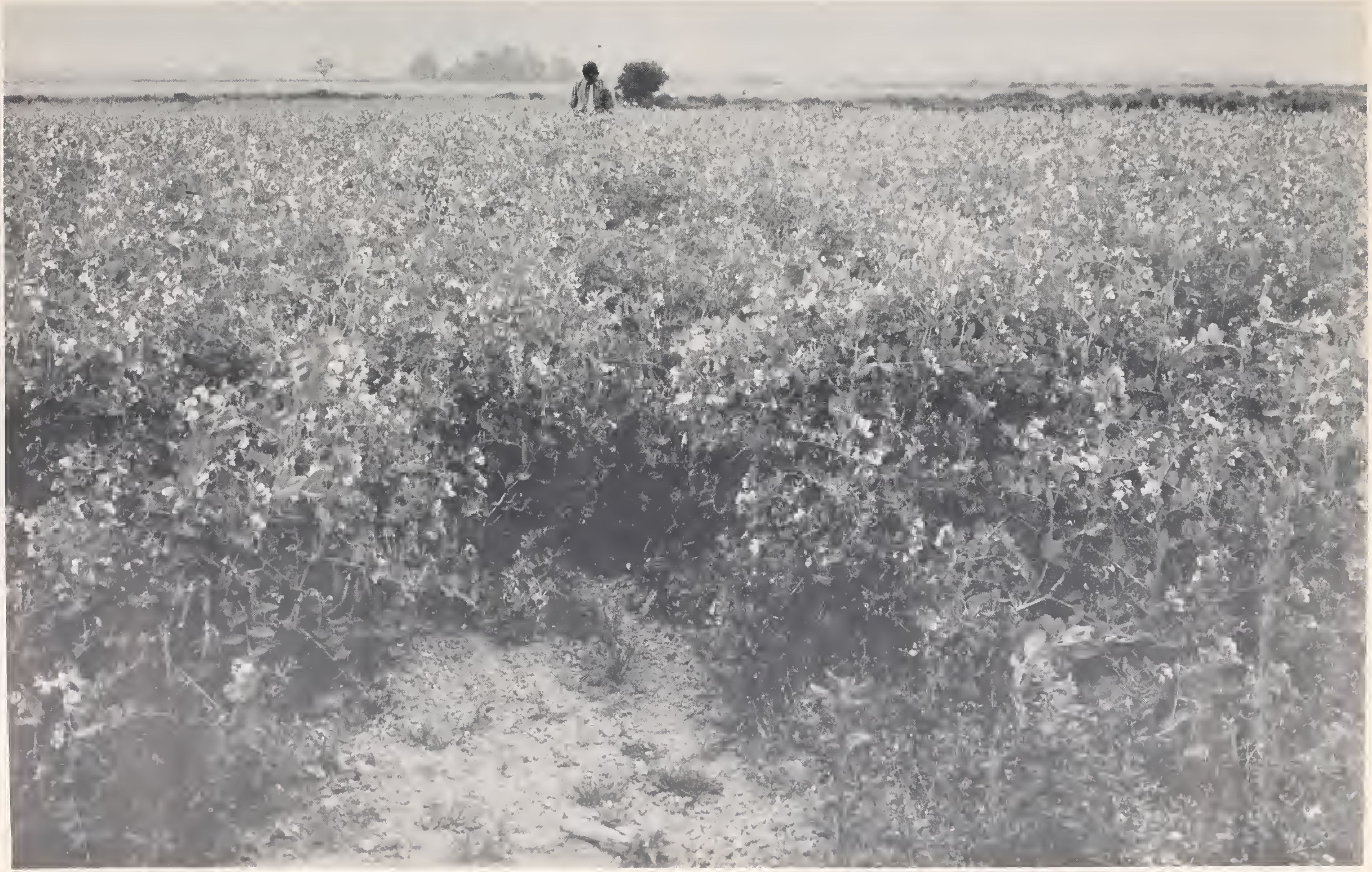


FIGURE 38.- A field of peas in full bloom in England.

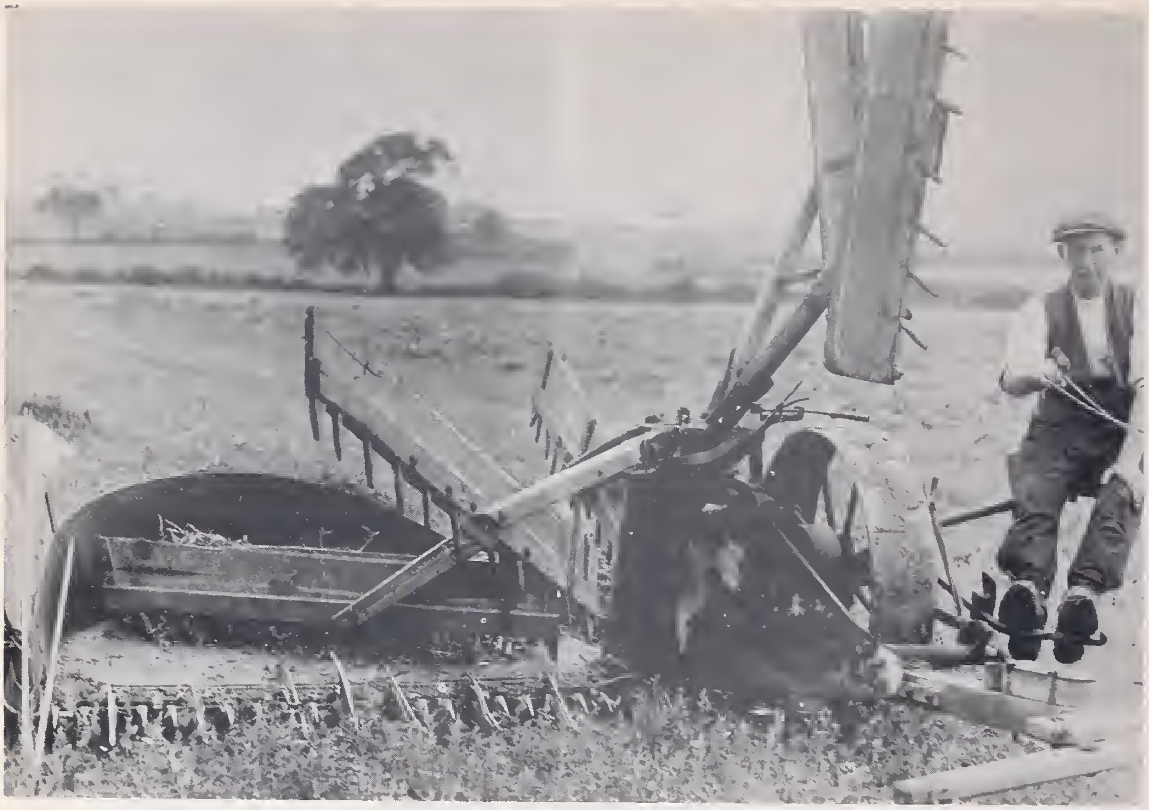


FIGURE 39.- Mowers with a special reel attachment.

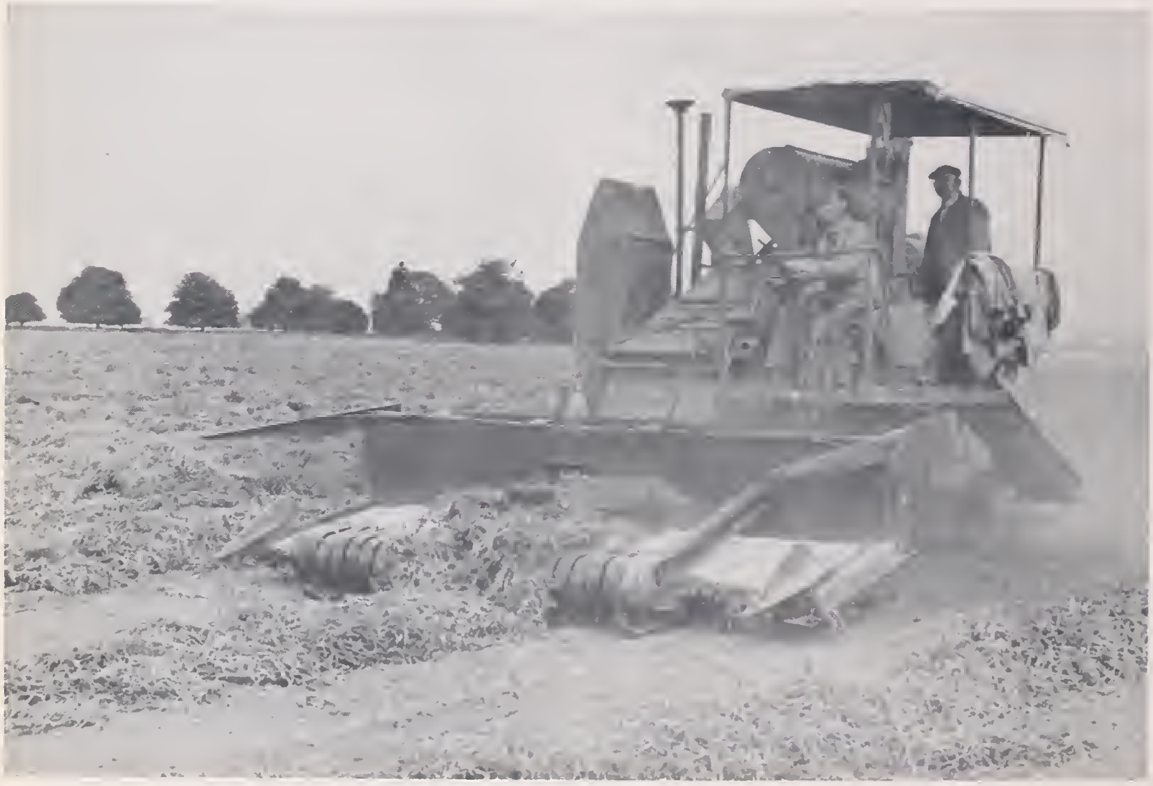


FIGURE 40.- A dry pulse combine.

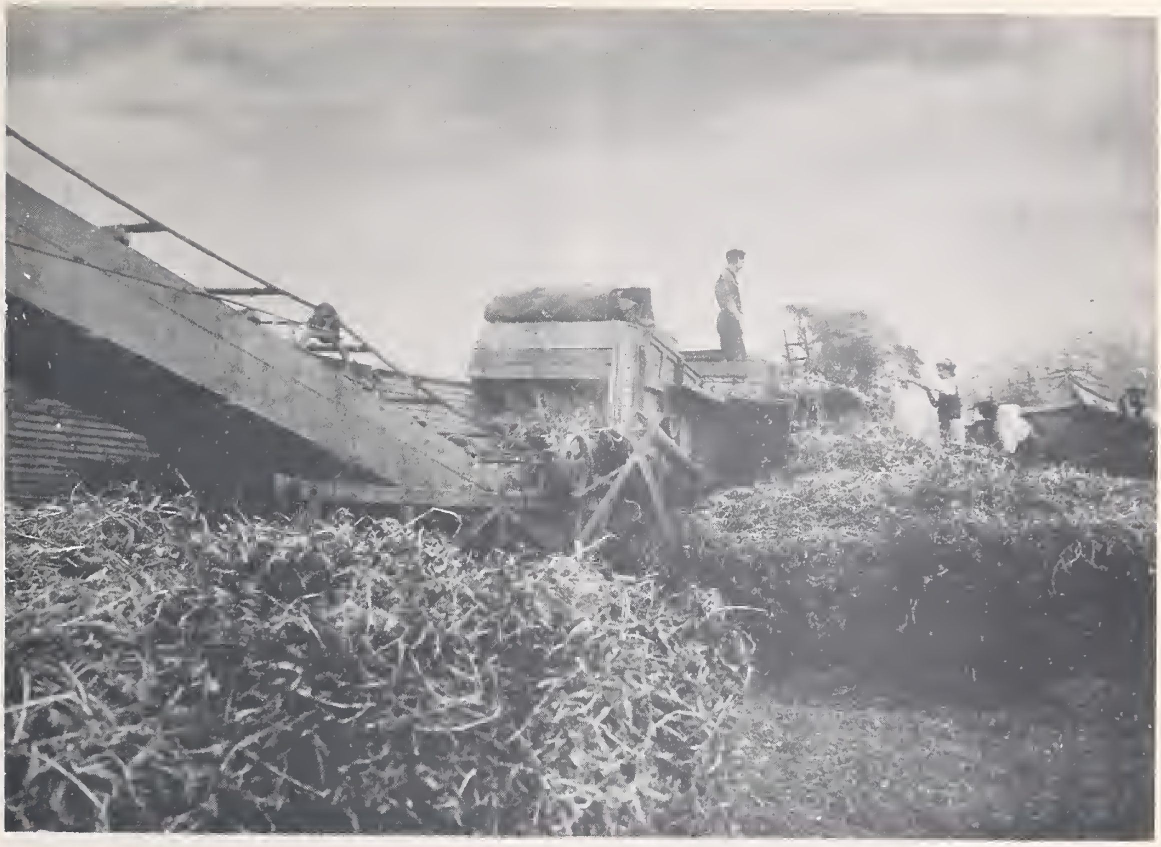


FIGURE 41.- Threshing cured peas from the stack.

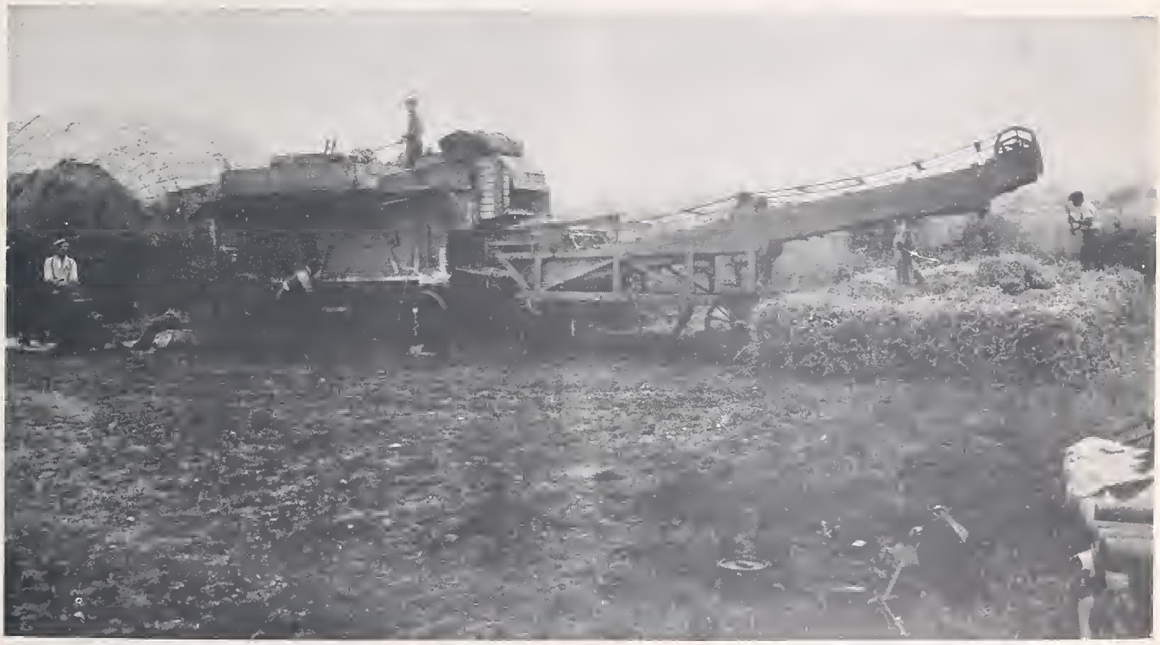


FIGURE 42.- Threshing and stacking pea straw. Pea straw is valued for feed and it is stacked and protected from the weather.

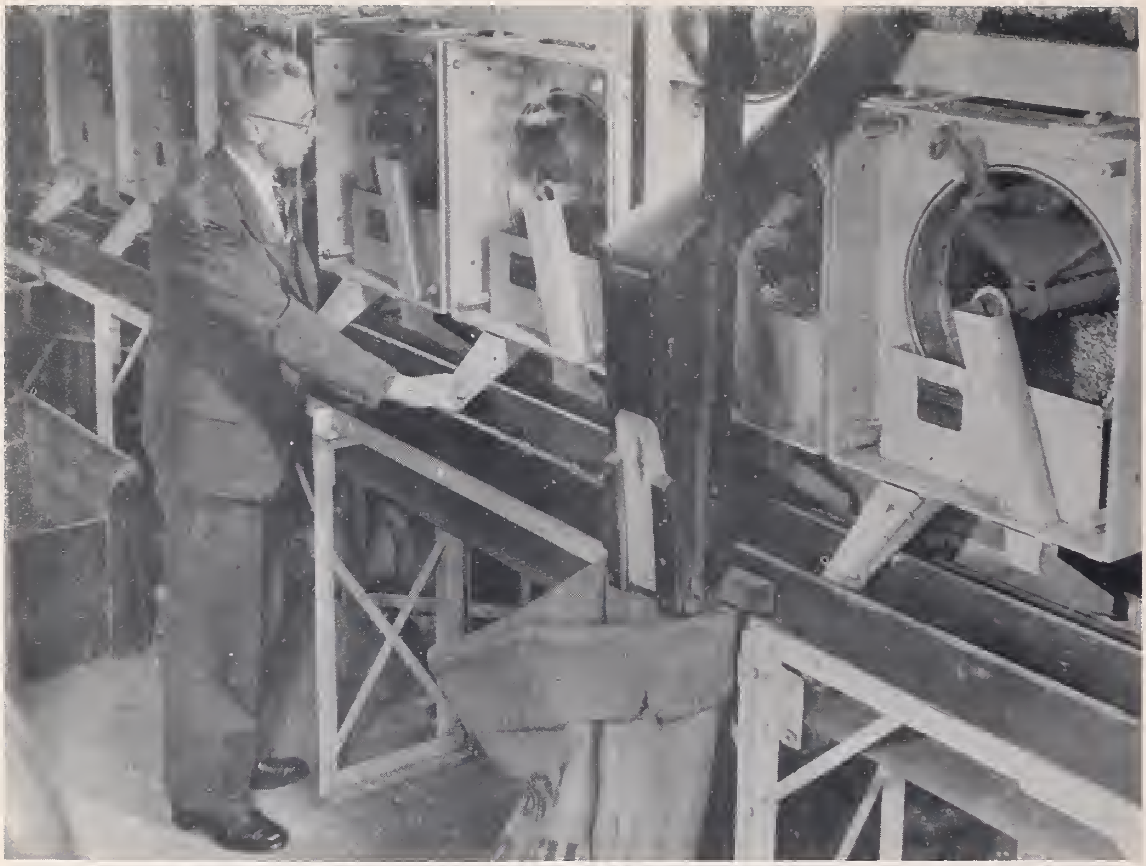
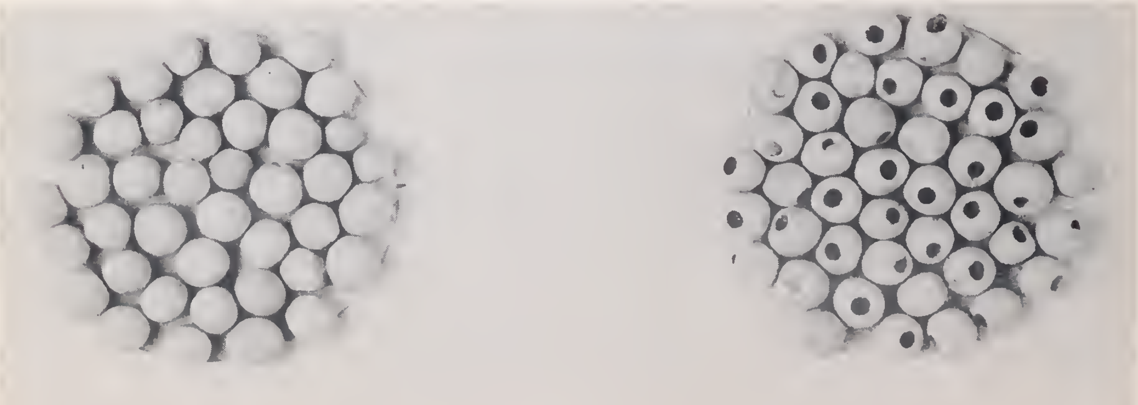


FIGURE 43.- Simplex machines. This is a battery of 5 pin machines which remove peas that have been punctured or eaten by the pea moth maggot. The peas roll over and over among thousands of tiny needles as they pass through the squirrel-cage type cleaner. The holes in the peas engage with the needle points and the unsound peas are removed.

EXAMPLES OF WEEVILY PEAS REMOVED FROM FIELD RUN DELIVERIES BY DEWEEVILING EQUIPMENT



Cleaning example

Clean-outs

FIGURE 44 .

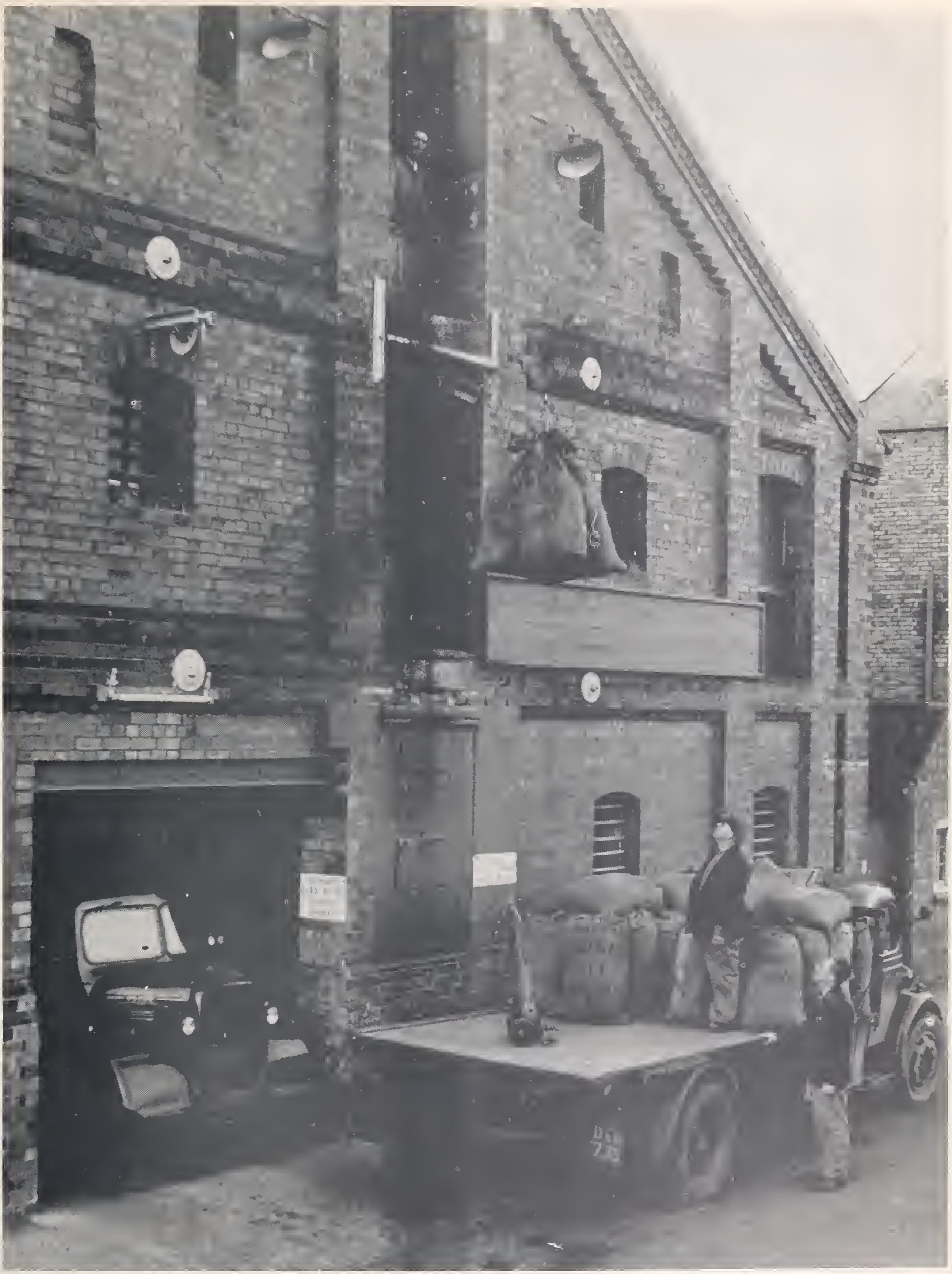


FIGURE 45.- Farmer's lot received at plant for cleaning. Note the hoist being used.

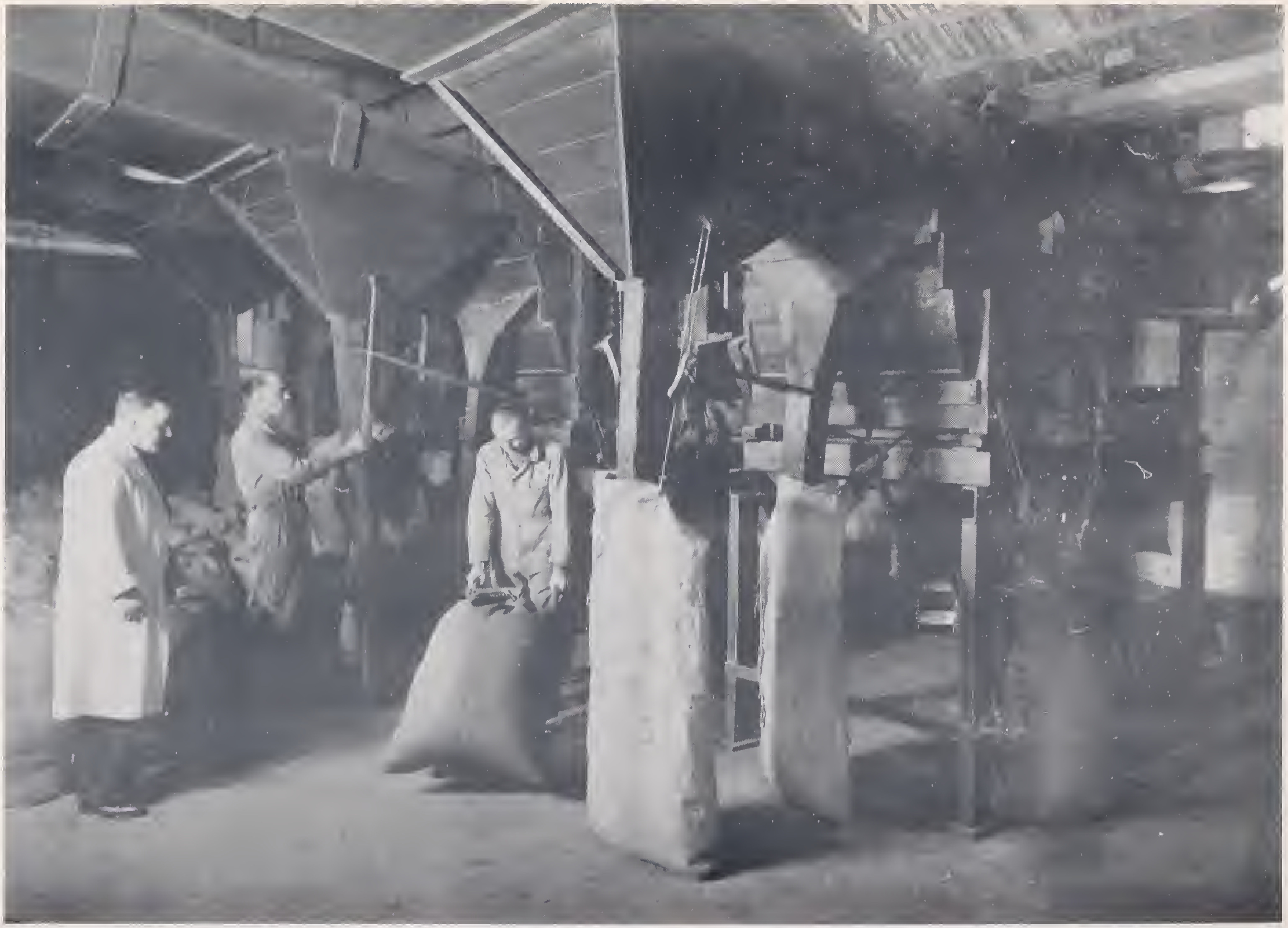


Figure 46.- Aspirators. These machines have a strong air blast that separates the pulses from foreign waste such as pieces of pods, stems, weed seeds, and light shrivelled seeds.

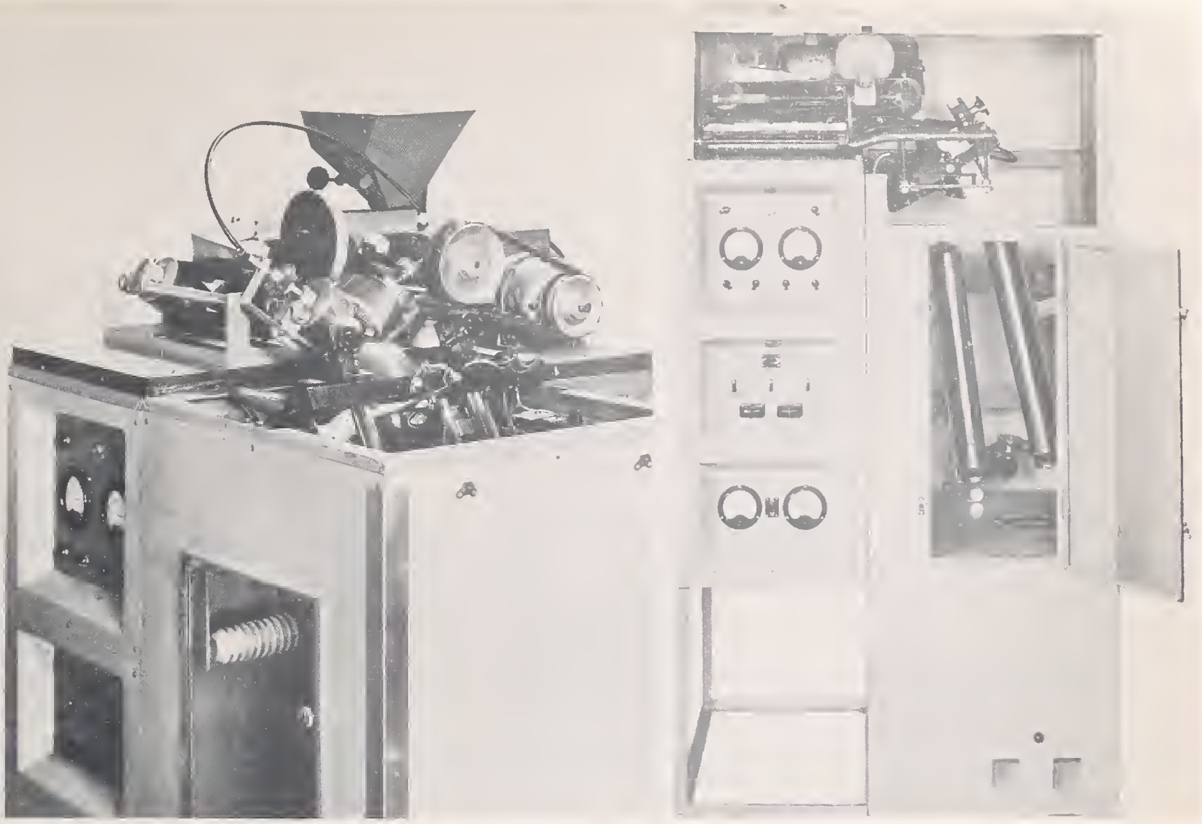
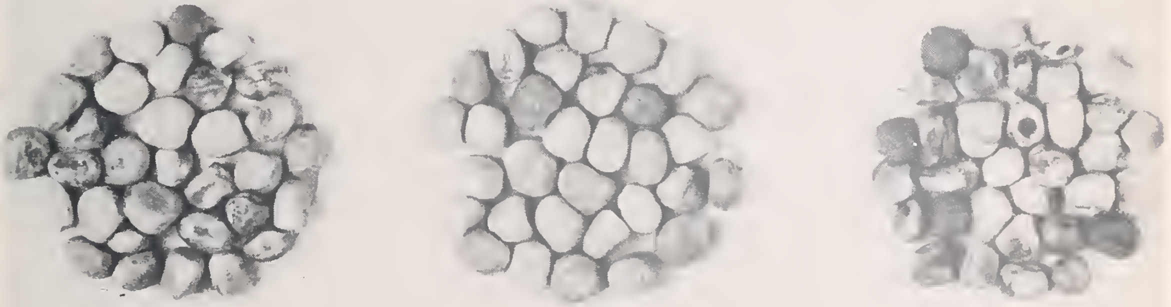


FIGURE 47.- Sortex machine, electric-eye equipment recently introduced in London.



ENGLAND: MARROWFAT PEAS CLEANED BY MEANS OF ELECTRIC EYE EQUIPMENT FOR SEED AND CANNING PURPOSES

Farmers' Lot Before Cleaning

After Cleaning

Sample of Rejects

FIGURE 48

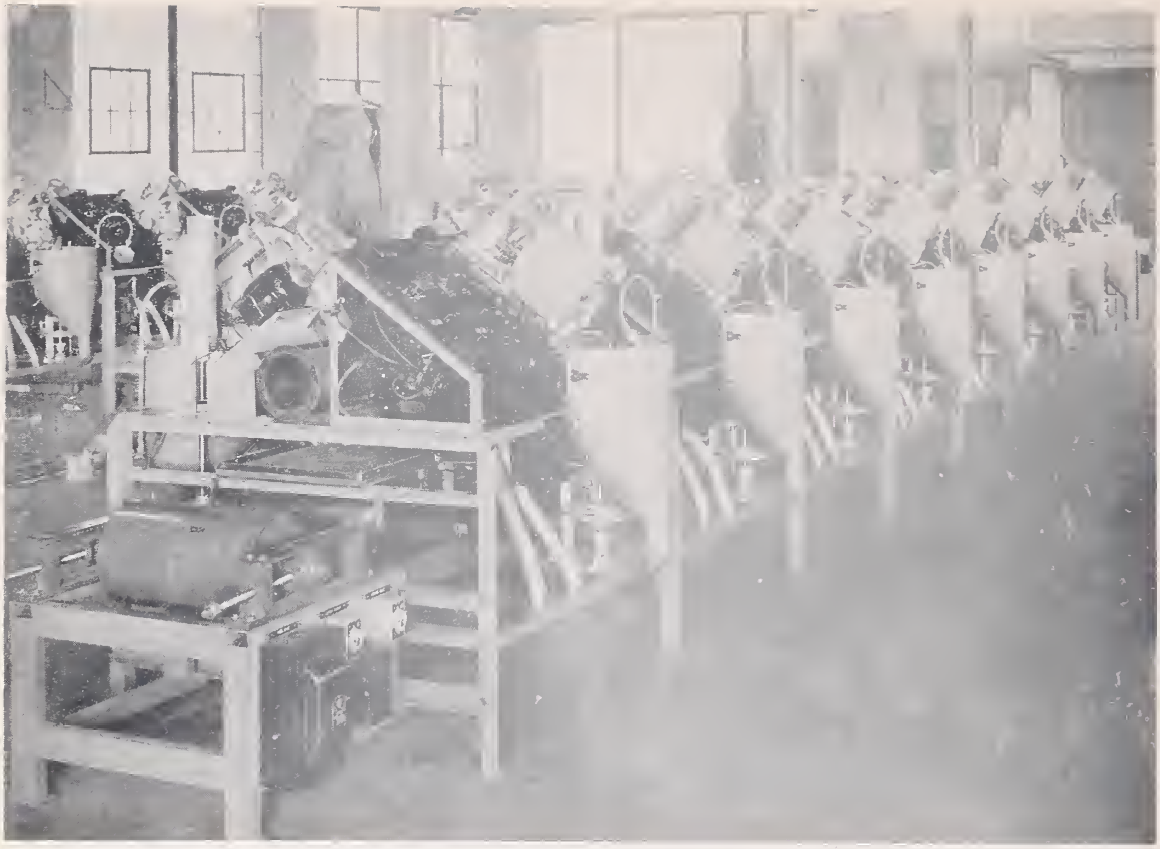


FIGURE 49.- Electric-eye sorting machine used especially on Great Northern and pea beans in the United States.

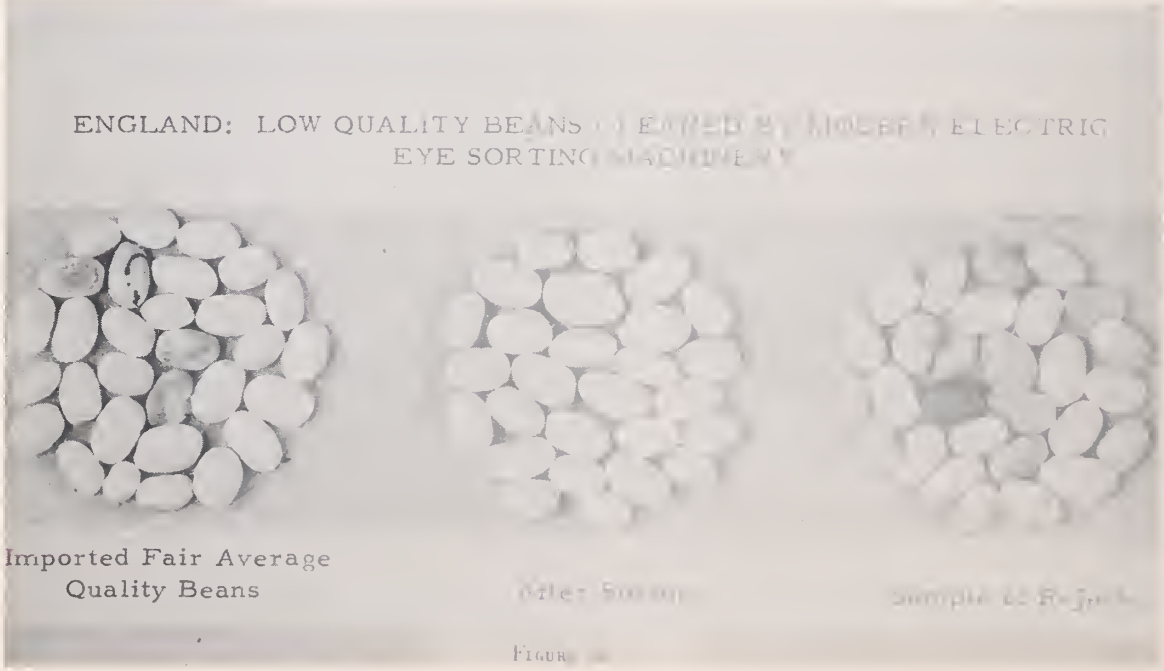

ENGLAND: LOW QUALITY BEANS CLEANED BY MODERN ELECTRIC
EYE SORTING MACHINERY
Imported Fair Average Quality Beans
After Sorting
Sample of Rejects

FIGURE 50

and Tasmania. Maple peas are generally imported to replace seed stock in much the same way as the green peas are purchased from those islands, but, in addition, considerable quantities are imported for pigeon feeding. These peas are mixed with English maple peas, dun peas, tic beans, and other reclaimed small peas from cleaning mills for pigeon feeding mixtures. Maple peas high in moisture which the farmers consider unsafe for storage are utilized on the farms for feed.

Cleaning and Grading

Most cleaning plants are equipped with hoists or conveyors where the peas can be elevated to the top of the building, thus making full use of the gravity flow to carry the peas through the various cleaning machines. Every crop passes through the aspirator, a machine with a strong air blast that separates the peas from all foreign waste such as straw, earth, or pieces of haulm which may have become mixed with the field bags. A photograph of the aspirator and bagging operation in an English cleaning plant is in figure 46.

Weevil-Damaged Peas

Some years a rather large percentage of the peas are injured by weevils. Peas that are weevily are not good for splitting and decorticating because, instead of two nice, smooth cotyledons or perfectly formed halves, they have considerable chipped and broken material suitable only for flour manufacture or grinding into feed.

Pin machines remove all peas that have been punctured or eaten by the pea moth maggot. (See figures 43 and 44.) The peas travel through a long squirrel-cage cylinder which has thousands of small needles protruding from the sieves. As the cylinder revolves the peas roll over until a needle finds one of the small holes in the pea and carries it away from the good peas. As the weevily peas are elevated on the points of needles up the side of the squirrel cage they are brushed off into a trough while the sound peas pass out the opposite end of the revolving cylinder. A picture of several units of this machine may be seen in figure 43. An example of the work accomplished is indicated in figure 44.

Electric Eye

Two different kinds of electric-eye machines are being used for sorting peas in England, both for seed and for canning dry. Examples of the electric-eye machines may be seen in figures 47 and 49. The electric eye is used mostly in the United States for sorting Michigan pea beans (navy) and great Northern beans in the Rocky Mountain area. It is used to some extent on dry peas and colored beans in the United States but only in a very limited way. In at least one plant the machine is used to select deep-green colored lima beans from the regular white limas producing a very excellent quality of green colored limas which, when sorted, resemble the green of freshly picked and shelled garden lima beans. (See figure 50.)

The use of the electric eye is rather new in Europe and will probably expand to new areas in a very short time. An electric-eye machine is being manufactured in London which will probably be used by seedsmen and bean and pea cleaning plant operators, and possibly can be utilized for cleaning garbanzos and lentils. The electric-eye machine is used in the United States for sorting dry beans, peas, peanuts, coffee, citrus, and other food commodities. An example of marrowfat peas as harvested, compared with the sorted peas and to the cleanout from one of the electric-eye plants in England, is indicated in figure 48.

The electric-eye equipment as used in the United States is very practical for preparing Michigan pea beans for the canners where high quality beans free of defects and foreign material are required. This high quality is also required by packagers. Cellophane and other transparent films are being used for consumers packages of 1-, 2-, and 3-pound sizes and it is necessary that this product be about 99 percent perfect, containing no stones or badly damaged beans.

APPENDIX

United States Standards
for
Dry Edible Beans

(a) Grades and grade requirements for the classes pea, medium white, marrow, Great Northern, small white, flat small white, large white, white kidney, light red kidney, dark red kidney, Western red kidney, yelloweye, old fashioned yellow eye, small red, pink, Bayo, and Mung beans and the classes of miscellaneous beans. (See also (g) Special Grades.)

Grade	Maximum limits of –				
	Defects consisting of splits, damaged beans, contrasting classes, and foreign material				Other classes that blend
	Total defects[1]	Contrasting classes	Foreign material		
			Total	Stones	
	Percent	*Percent*	*Percent*	*Percent*	*Percent*
U.S. No. 1[1]...........	2.0	0.5	0.5	0.2	5.0
U.S. No. 2[1]...........	4.0	1.0	1.0	.4	10.0
U.S. No. 3[1]...........	6.0	2.0	1.5	.6	15.0
U.S. Substandard......	U. S. Substandard shall include beans of any one of these classes which are not well screened or which otherwise do not come within the requirements of the specifications for the grade United States No. 1, United States No. 2, or United States No. 3, or for the grade United States Sample Grade.				
U.S. Sample Grade.....	U. S. Sample Grade shall include beans of any one of these classes which are musty, or sour, or heating, or weevily, or materially weathered, or which have any commercially objectionable odor, or Which are otherwise of distinctly low quality.				

[1] The beans in grades U.S. No. 1, U.S. No. 2, and U.S. No. 3 of any one of these classes shall be well screened.

(b) Grade and grade requirements for the classes Blackeye and cranberry beans (See also (g) Special Grades.)

Grade	Maximum limits of –					
	Defects consisting of splits, damaged beans, contrasting classes, and foreign material					Classes that blend
	Total	Damaged beans	Contrasting classes	Foreign material		
				Total	Stones	
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
U.S. No. 1[1]...........	4.0	2.0	0.5	0.5	0.2	5.0
U.S. No. 2[1,2]...........	6.0	4.0	1.0	1.0	.4	10.0
U.S. No. 3[1,2]..........	8.0	6.0	2.0	1.5	.6	15.0
U.S. Substandard.......	U. S. substandard shall include beans of any one of these classes which are not well screened or which otherwise do not come within the requirements of the specifications for the grades U. S. No. 1, U. S. No. 2, or U. S. No. 3, or for the grade U. S. Sample grade.					
U.S. Sample grade......	U. S. Sample grade shall include beans of either of these classes which are musty, or sour, or heating, or materially weathered, or which are weevily, or which have any commercially objectionable odor or which are otherwise of distinctly low quality.					

[1] The beans in the grades U. S. No. 1, U.S. No. 2, and U. S. No. 3 of each of these classes shall be well screened.

[2] The beans in grade U. S. No. 2 of the class Blackeye may contain not more than 0.2 percent, and the beans in grade U. S. No. 3 of this class may contain not more than 0.5 percent, of clean-out weevil-bored beans.

(c) Grade and Grade Requirements for the class Pinto beans, (See also (g) Special grades.)

Grade	Maximum limits of –				
	Defects consisting of splits, damaged beans, contrasting classes and foreign material				Other classes that blend
	Total	Contrasting classes	Foreign material		
			Total	Stones	
	Percent	*Percent*	*Percent*	*Percent*	*Percent*
U.S. No. 1[1].............	4.0	0.5	0.5	0.2	5.0
U.S. No. 2[1].............	6.0	1.0	1.0	.4	10.0
U.S. No. 3[1].............	8.0	2.0	1.5	.6	15.0
U.S. Substandard........	U. S. Substandard shall include beans of this class which are not well screened or which otherwise do not come within the requirements of the specifications for the grades U. S. No. 1, U. S. No. 2, or U. S. No. 3, or for the grade United States Sample Grade.				
	U. S. Sample Grade shall include beans of this class which are musty, or sour, or heating, or weevily, or materially weathered, or which have any commercially objectionable odor, or which are otherwise of distinctly low quality.				

[1] The beans in the grades U. S. No. 1, U. S. No. 2, and U. S. No. 3 of this class shall be well screened.

(d) Grade Requirements for the classes large lima and baby lima beans and the classes of miscellaneous lima beans, (See also (g) Special Grades.)

Grade	Maximum limits of –							
	Blistered, wrinkled, skinned, and/or broken	Splits	Defects consisting of damaged beans, contrasting classes, and foreign material					Other Classes that blend
			Total	Badly damaged beans	Contrasting classes	Foreign material		
						Total	Stones	
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
U.S. No. 1[1,2,3]...	2.0	2.0	1.0	0.5	0.2	0.2	Trace	2.0
U.S. No. 1[1,4].....	3.0	3.0	2.0	1.0	0.5	0.5	0.2	5.0
U.S. No. 2[1,5].....	5.0	5.0	3.0	1.5	1.0	1.0	.3	10.0
U.S. No. 3[1,5].....	8.0	8.0	5.0	2.0	2.0	1.5	.6	15.0
U.S. Substandard..	U. S. Substandard shall include beans of any one of these classes which are not well screened or which otherwise do not come within the requirements of the specifications for the grades U. S. Extra No. 1, U. S. No. 1, U. S. No. 2, U. S. No. 3, or for the grade U. S. Sample Grade.							
	U. S. Sample grade shall include beans of any one of these classes which are musty, or sour, or heating, or weevily, or materially weathered, or which have any commercially objectionable odor, or which are otherwise of distinctly low quality.							

[1] The beans in the grade U. S. Extra No. 1, U. S. No. 1, and U. S. No. 2, and U. S. No. 3 of any one of these classes shall be well screened.

[2] The beans in the grade U. S. Extra No. 1 of any one of these classes shall be of good natural color, and may contain not more than 17 percent moisture.

[3] The beans in the grade U. S. Extra No. 1 of the class large Lima beans may contain not more than 20 percent of beans that will pass through a 30/64 sieve, which 20 percent may include not more than 5 percent of beans that will pass through a 28/64 sieve.

[4] The beans in the grade U. S. No. 1 of the class large Lima beans may contain not more than 25 percent of beans that will pass through a 28/64 sieve, which 25 percent may include not more than 5 percent of beans that will pass through a 24/64 sieve.

[5] The beans in the grade U. S. No. 2 and United States No. 3 of the class Large Lima beans may contain not more than 40 percent of beans that will pass through a 28/64 sieve, which 40 percent may include not more than 5 percent of beans that will pass through a 24/64 sieve.

(e) *Grade designations.* The grade designation for all classes of beans, except mixed beans shall include in the order named the letters "U. S.," the name or number of the grade, and the name of the class. In addition, the designation for the grade U. S. Substandard shall include the percentage each of sound beans, splits, damage, contrasting classes, and foreign material.

(f) *Grade requirements and grade designation for the class Mixed beans.*

1. *Grade requirements.* Mixed beans shall be graded according to the grade requirements of the class of beans which predominates in the mixture, except that the factors "contrasting classes" and "classes that blend" and the factor of size in the case of mixtures in which the class Large Lima predominates, shall be disregarded.

2. *Grade designation.* The grade designation for the class Mixed beans shall include, in the order named, the letters "U. S.," the number and name of the grade as the case may be, and the words "Mixed beans," followed by the name and approximate percentage of each class of beans which is contained in the mixture.

(g) *Special grades, special grade requirements, and special grade designations for all classes of beans.*

1. *Handpicked beans.*

(i) *Requirements.* Handpicked beans shall be beans of any one of the classes, except Blackeye, Cranberry, Pinto, Large Lima, Baby Lima, Miscellaneous Limas, and Mixed beans, which meet the grade requirements of any of the grades U.S. No. 1, U.S. No. 2, or U.S. No. 3, which have been handpicked or otherwise processed so that they contain not more than 0.3 percent badly damaged beans, not more than 0.01 percent contrasting classes, and not more than 0.01 percent foreign material. Handpicked beans shall not include "off-color" beans.

(ii) *Grade designations.* Handpicked beans shall be graded and designated as provided in either paragraph (a) or paragraph (b) of this section.

(a) *Choice Handpicked.* Handpicked beans which meet the grade requirements of the grade U. S. No. 1 and which do not contain more than 1.5 percent "total defects" shall be graded and designated as "U. S. Choice Handpicked." Such designation shall precede the name of the class.

(b) *Handpicked.* Handpicked beans which do not meet the grade requirements for the grade U. S. Choice Handpicked shall be graded and designated according to the grade requirements of the standards applicable to such beans if they were not handpicked, and there shall be added to, and made a part of, the grade designation, following the number of the grade, the word "Handpicked."

2. *High moisture beans.*

   (i) *Requirements.* High moisture beans shall be beans of any class which contain more than 18 percent of moisture.

   (ii) *Grade designation.* High moisture beans shall be graded and designated according to the grade requirements of the standards otherwise applicable to such beans and there shall be added to, and made a part of, the grade designation, following the name of the class, the words "high moisture," followed by a statement of the percentage of moisture in the beans.

3. *Off-color beans.*

   (i) *Requirements.* Off-color beans shall be beans of any class that, en masse, are distinctly off-color due to age or to any other natural cause but which are not materially weathered.

   (ii) *Grade designations.* Off-color beans shall be graded and designated according to the grade requirements of the standards applicable to such beans if they were not off-color, and there shall be added to, and made a part of, the grade designation, following the name of the class, the word "off-color."

United States Standards for Peas

Definitions

For the purpose of the official United States standards for peas:

Peas shall be the dry threshed peas of any variety or kind of field and garden peas and which contain not to exceed 50 percent of foreign material including dockage and not to exceed 5 percent of foreign material after the removal of dockage.

Basis of determinations.- All determinations of factors entering into the grading of a lot of peas and the testing of a lot of peas for dockage shall be made upon the basis of a representative sample drawn in accordance with methods approved by the Chief of the Bureau of Agricultural Economics.[1]

Percentages.- All percentages, except in the case of moisture, shall be ascertained by weight.

Percentage of moisture shall be that ascertained by the water oven and the method of use thereof described in Service and Regulatory Announcements No. 147 of the Bureau of Agricultural Economics[1] of the United States Department of Agriculture, or that ascertained by any device and method which give equivalent results in the determination of moisture.

Dockage shall apply only to thresher-run peas or peas which have not been recleaned and/or processed and shall include dirt, weed seeds, chaff, cereal grains, and all other matter other than peas which can be readily removed by the use of appropriate sieves or cleaning devices and all small, undeveloped peas and splits or pieces of peas that pass readily through a sieve with slotted perforations which will result in the smallest loss of marketable peas applicable to the principal use of the class being tested, the perforations of such sieve to be of one of the following dimensions::

---

[1] Since August 18, 1945, the Production and Marketing Administration has been responsible for the conduct and administration of this work.

8/64 inch x 3/4 inch
9/64 inch x 3/4 inch
10/64 inch x 3/4 inch
11/64 inch x 3/4 inch
12/64 inch x 3/4 inch
13/64 inch x 3/4 inch
14/64 inch x 3/4 inch

Dockage shall be determined on the basis of not less than a one-thousand-gram portion of the original sample including the dockage. In calculating total dockage, fractional percentages of less than one percent shall be ignored.

Foreign material other than dockage or "inseparable foreign material" shall include all matter other than peas which is not separated from the sample in the proper determination of dockage.

Inspection and Certification of Thresher-Run Peas

Peas of any class which have not been recleaned and/or processed shall be inspected without reference to grade and shall be certified as to-

(1) the class;

(2) the total percentage of dockage, if any, and the analysis thereof, including the percentage each of small peas, splits, and foreign material;

(3) the percentage of each defect in the dockage-free peas and the total thereof, as follows:

  (a) bleached and other classes
  (b) shriveled
  (c) cracked
  (d) splits
  (e) damage
  (f) weevil damage
  (g) inseparable foreign material;

(4) the general appearance;

provided, however, that in dockage-free peas of the classes Bluebell, Alaska, First and Best, White Canada, and other smooth-seeded varieties the percentage of cracked seed coats or "cracked" in excess of 3.0 percent only shall be considered in computing total defects. All factors other than dockage and the analysis thereof, shall apply only to, and be based on, the sample of peas when free from dockage, except that general appearance shall be based on the sample after the removal of dockage and defects.

Classes of Peas

Peas shall be classified according to varietal type, for example Alaska, White Canada, Austrian Winter, Perfection, Surprise, etc., provided however, that the use of a variety name in certifying the class of peas shall not imply any guarantee of varietal purity.

United States Grade Requirements[1] for Peas

(These requirements apply to recleaned and/or processed peas)

Grade	Maximum limits of –							
	Bleached and other classes[2]		Shriv-eled	Cracked seed coats	Splits, damage, weevil damage, and foreign material			
	Total	Other classes			Total	Splits	Weevil damage	Foreign material
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
U.S. No. 1..........	1.5	0.5	2.0	3.0	2.0	0.5	0.5	[3]Tr.
U.S. No. 2..........	3.0	1.0	4.0	6.0	3.0	1.0	1.0	0.2
U.S. No. 3..........	5.0	2.0	8.0	10.0	5.0	1.0	1.0	.5
U.S. Sample grade....	Sample grade shall be peas which do not meet the requirements of any of the above grades, or which have any commercially objectionable odor, or are heating, or are infested with live weevil or other insects, or which are otherwise of distinctly low quality.							

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[1] Condition and general appearance:

(a) *Color.* – Peas of the grades U. S. No. 1 shall be good natural color; U. S. No. 2 may be slightly off color; and U. S. No. 3 may be of a poor color.

(b) *Moisture.* – Peas of the grade U. S. No. 1, U. S. No. 2, and U. S. No. 3 may contain not to exceed 16.0 percent moisture.

(c) *Size requirements.* – The minimum size requirements for each of the grades U. S. No. 1, U. S. No. 2, and U. S. No. 3 shall be such that not more than 2.0 percent of the peas will pass through a sieve with slotted perforations of the dimensions generally used in the determinations of dockage on thresher-run peas of the respective classes. In determining or calculating tolerances for size, fractional percentages of less than 1 percent shall be ignored.

[2] *Other classes.* – The percentage limits here given for "other classes" apply only to those peas of which the cotyledons and/or seed coats are not the same color as those of the peas in the sample being graded. An additional allowance of 5 percent in grade 1, 10 percent in grade 2, and 15 percent in grade 3 shall be made for other classes of which the cotyledons and/or seed coats are of the same color as those of the peas being graded.

[3] *Trace* (Tr.), as applied to foreign material in grade U. S. No. 1 shall not exceed 1/100 of 1 percent.

Grade Requirements[1] for Green Split Peas and Yellow Split Peas

Grade	Maximum limits of –						
	Bleached and Other classes		White caps	Whole peas	Damage, weevil damage and foreign material		
	Total	Other classes			Total	Weevil damage	Foreign material
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
U.S. No. 1..................	1.5	0.5	1.0	0.5	1.0	0.5	[2]Tr.
U.S. No. 2..................	3.0	1.0	2.0	1.0	2.0	1.0	0.2
U.S. No. 3..................	5.0	2.0	3.0	1.0	3.0	1.0	.5
U.S. Sample grade..........	Sample grade shall be split-peas which do not meet the requirements of any of the above grades or which have any commercially objectionable odor or contain over 16% moisture, or are heating or are infested with live weevil or other insects, or which are otherwise of distinctly low quality.						

---

[1] General appearance and size:

(a) *Color.* – Split-peas of the grade U. S. No. 1 shall be good natural color; U. S. No. 2 may be slightly off color; and U. S. No. 3 may be of a poor color.

(b) *Size requirements.* – The minimum size requirements for the respective numerical grades for split-peas shall be as follows:

U. S. No. 1 - Not more than 2% shall pass readily through a sieve with round perforations 10/64 inch in diameter;

U. S. No. 2 - Not more than 15% shall pass readily through a sieve with round perforations 10/64 inch in diameter including not more than 2% through a sieve with round perforations 8/64 inch in diameter;

U. S. No. 3 - Not more than 25% shall pass readily through a sieve with perforations 10/64 inch in diameter including not more than 2% through a sieve with round perforations 8/64 inch in diameter; provided, that in each numerical grade none shall pass through a sieve with round perforations 6/64 inch in diameter.

In determining size or calculating tolerances for size, fractional percentages of less than one percent shall be ignored.

[2] Trace (Tr.), as applied to foreign material in grade 1 shall not exceed 1/100 of 1 percent.

United States Standards for Lentils[1]

For the purposes of the U. S. Standards for Lentils:

Lentils. Lentils shall be dry threshed seeds of the lentil plant, which consist of 50 percent or more whole seeds (which are not split) of lentils.

Classes

Lentils shall be divided into four classes as follows:

Large Lentils. This class shall include lentils of which not more than 2 percent will pass readily through a No. 15 sieve.

Medium Lentils. This class shall include lentils of which not less than 80 percent will pass through a No. 15 sieve and not more than 2 percent will pass through a No. 12 sieve.

Small Lentils. This class shall include lentils of which not less than 100 percent will pass through a No. 15 sieve, not less than 80 percent will pass through a No. 12 sieve, and not more than 2 percent will pass through a No. 9 sieve.

Mixed Lentils. This class shall include lentils which do not meet the size requirements for any of the classes Large Lentils, Medium Lentils, or Small Lentils.

Grades

Lentils shall be graded and designated according to the respective grade requirements of their appropriate class and according to the special grades when applicable.

Grade Designations. The grade designation shall include successively the letters "U. S.," the number or name of the applicable grade, the name of the class, and such additional statements as may be required by these standards.

Grade Designation for U. S. Substandard Lentils. The grade designation for lentils of the grade "U. S. Substandard" of any class shall include successively, in the order named:

(1) The Letters "U. S.";
(2) The word "Substandard";
(3) The name of the class;
(4) The words "sound lentils," followed by a statement of the percentage thereof;
(5) The word "defects," followed by a statement of the percentage thereof; and
(6) Such special grades as may be applicable.

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[1] The specifications of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act.

Grade designation for U. S. Sample Grade Lentils. The grade designation for lentils of the grade "U. S. Sample Grade" of any class shall include successively, in the order named:

(1) The letters "U. S.";

(2) The words "Sample Grade";

(3) The name of the class; and

(4) Such special grades as may be applicable.

Grade Requirements for the Classes Large Lentils, Medium Lentils, Small Lentils, and Mixed Lentils

Grade	Maximum limits of –		
	Defects consisting of splits, damaged lentils and foreign material		
	Total defects	Foreign material	
		Total	Stones
	Percent	*Percent*	*Percent*
U. S. No. 1	2.0	0.2	Trace
U. S. No. 2	4.0	0.5	0.2
U. S. Sample Grade	U. S. Substandard shall include lentils of any one of these classes which do not come within the requirements of the specifications for the grade U. S. No. 1, or U. S. No. 2, or for the grade U. S. Sample Grade.		
U. S. Sample Grade	U. S. Sample Grade shall include lentils of any one of these classes which are musty, or sour, or heating, or hot, or weevily, or materially weathered, or which have any commercially objectionable odor, or which are otherwise of distinctly low quality.		